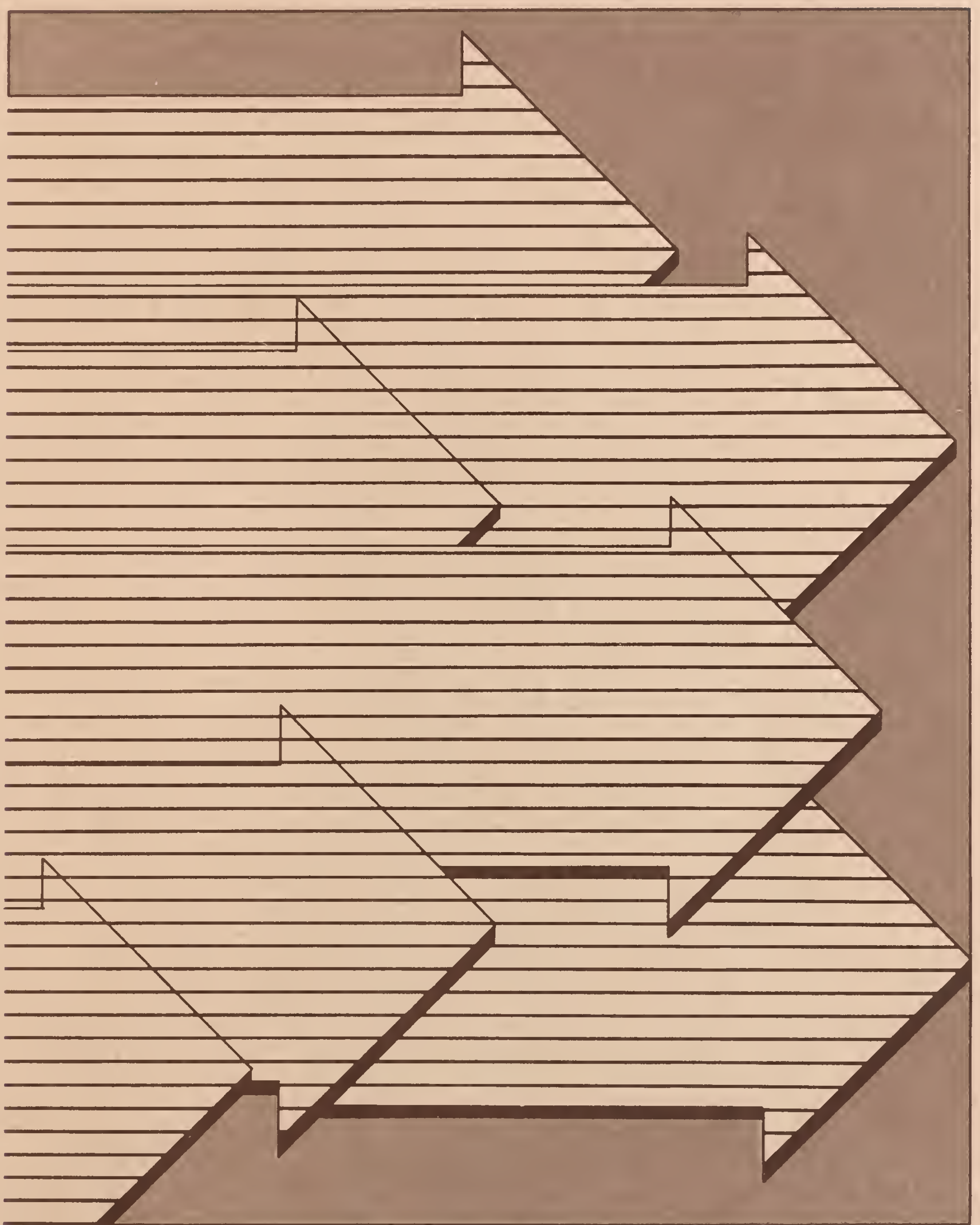
GROWTH OF COOPERATIVES IN SEVEN INDUSTRIES



U.S.
Department
of Agriculture

Economics, Statistics,
and Cooperatives
Service

Cooperative
Research
Report 1

Contents

Highlights

Cooperative growth in recent decades has generated suggestions that cooperatives have somehow spawned into giant enterprises that have attained a more favorable competitive position when compared with their noncooperative counterparts. Facts, however, don't bear out this contention in most cases as the following study of cooperative growth in seven selected industries shows.

Comparative figures were gathered on four farm products marketed by cooperatives along with three products they distributed. Marketed products include (1) fruits and vegetables, (2) milk and dairy, (3) poultry and eggs, and (4) grain. Distributed products include (1) feed, (2) fertilizer, and (3) petroleum.

The study shows that while sales by cooperatives have increased substantially since 1950, only those cooperatives marketing milk and other dairy products, and those distributing fertilizer or petroleum products, gained a significant increase in the *share* of the farm market by 1975. The study also reveals that cooperatives' share of the market for fruits and vegetables, poultry and eggs, and feed changed little during the period. The data reflect only the cooperatives' share at the local or first-handler level. Cooperatives have a much lower share at the processor level.

The study further shows that 1975 sales of the four largest cooperatives in each of the four products marketed for farmers were only 25 to 55 percent of the sales of the four largest noncooperative firms handling the same products (figure 1).

Sales of feed and fertilizer/lime by the four largest cooperatives were 34 and 69 percent, respectively, of sales registered by the four largest noncooperative companies handling the same products. However, petroleum sales by the four largest cooperatives were less than 2 percent of sales of the four largest petroleum companies (figure 2).

Following is a summary, by specific commodities, of how the four largest cooperatives compared in 1975 with the four largest companies handling the same commodities.

Marketing of Farm Products

Grain — Cooperatives handled 40 percent of the total grain marketed in 1974-75, compared with 28 percent in 1950-51. Compared with the four largest grain companies, the four largest cooperatives' total sales were 24 percent, total assets 28 percent, and net worth 38 percent.

The largest cooperatives were in a relatively weaker position in total sales but stronger in total assets than they were in 1960.

Fruits and Vegetables — Cooperatives' share of farm marketings were 25 percent in 1975, up 1 percent from 1950.

Compared with the four largest fruit and vegetable companies, the four largest cooperatives' sales were 43 percent, assets 24 percent, and net worth 17 percent.

These largest cooperatives were in about the same relative position as in 1960.

Milk and Other Dairy Products — Cooperatives' share of the market advanced

from 48 percent in 1950-51 to 77 percent of total milk and other dairy products marketed at the farm level in 1974-75. However, at the plant level in 1973, cooperatives' share of total milk processed or manufactured was only 28 percent and their share at the retail level was less than 1 percent for any product.

Compared with the four largest dairy companies, the four largest cooperatives' milk and dairy product sales were 55 percent; but total sales were only 25 percent, net margins only 5 percent, assets 12 percent, and net worth 9 percent.

The four cooperatives increased their relative position between 1960 and 1975 in milk and other dairy product sales and in total assets.

Poultry and Eggs — Cooperatives' 8 percent share of the market in 1974-75 was the same as in 1950-51.

Compared with the four largest poultry and egg companies 1975 operations, the four largest cooperatives' poultry and egg sales were 51 percent; but total sales and net margins were 37 percent, total assets 63 percent, and net worth 48 percent.

Distribution of Farm Supplies

Feed — Cooperatives' 18 percent share of the farm market in 1974-75 was the same as in 1950-51.

Compared with the four largest feed companies, the four largest cooperatives' feed sales were 34 percent; but total sales were 57 percent, net margins 65 percent, assets 60 percent, and net worth 38 percent.

From 1960-1975, the largest cooperatives gained a little in total sales and assets but lost a little in net income and net worth relative to the largest feed companies.

Fertilizer and Lime — Cooperatives increased their fertilizer and lime volume substantially and were handling 30 percent of the farm market in 1975, compared with 15 percent in 1950.

Compared with the four largest fertilizer companies, the four largest cooperatives' fertilizer and lime sales were 69 percent; but total sales were only 15 percent, net margins 28 percent, assets 13 percent, and net worth 7 percent.

Since 1960, the four cooperatives improved their relative position in total sales but became weaker in net margins, assets, and net worth compared with the four largest fertilizer companies.

Petroleum — Cooperatives handled a considerably greater share of farmers' petroleum needs during the period, from 21 percent in 1950 to 31 percent in 1975.

Compared with the four largest petroleum companies, the four largest cooperatives' petroleum sales, net margins, and net worth were less than 2 percent; total sales were only 3 percent, and assets 2 percent.

The largest cooperatives were in about the same position in all comparisons with the oil companies as they were in 1950.

FIGURE 1 -- SALES AND ASSETS OF FOUR COOPERATIVES AND FOUR NONCOOPERATIVE FIRMS REPORTING LARGEST SALES OF FOUR FARM PRODUCTS IN 1975

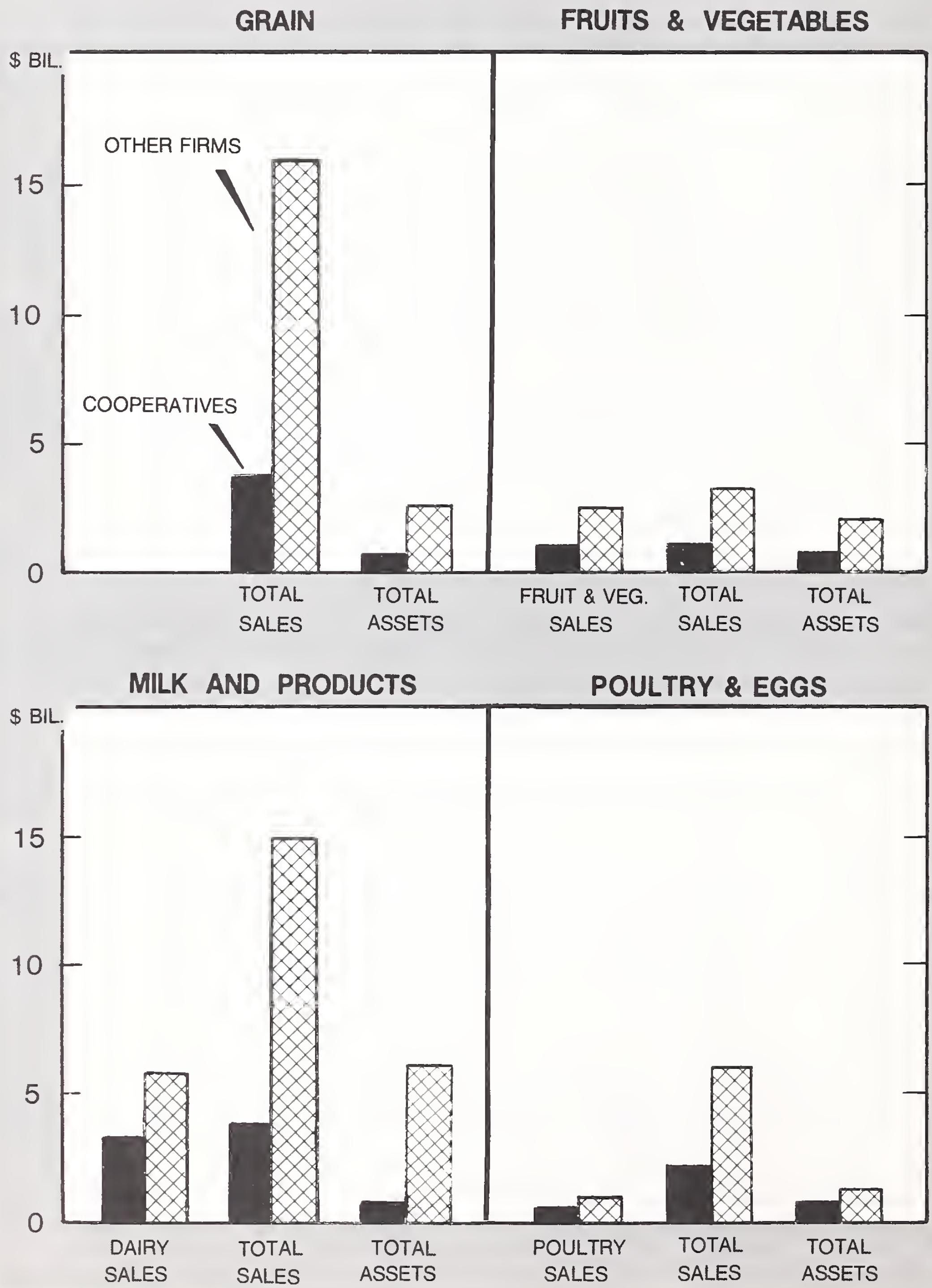
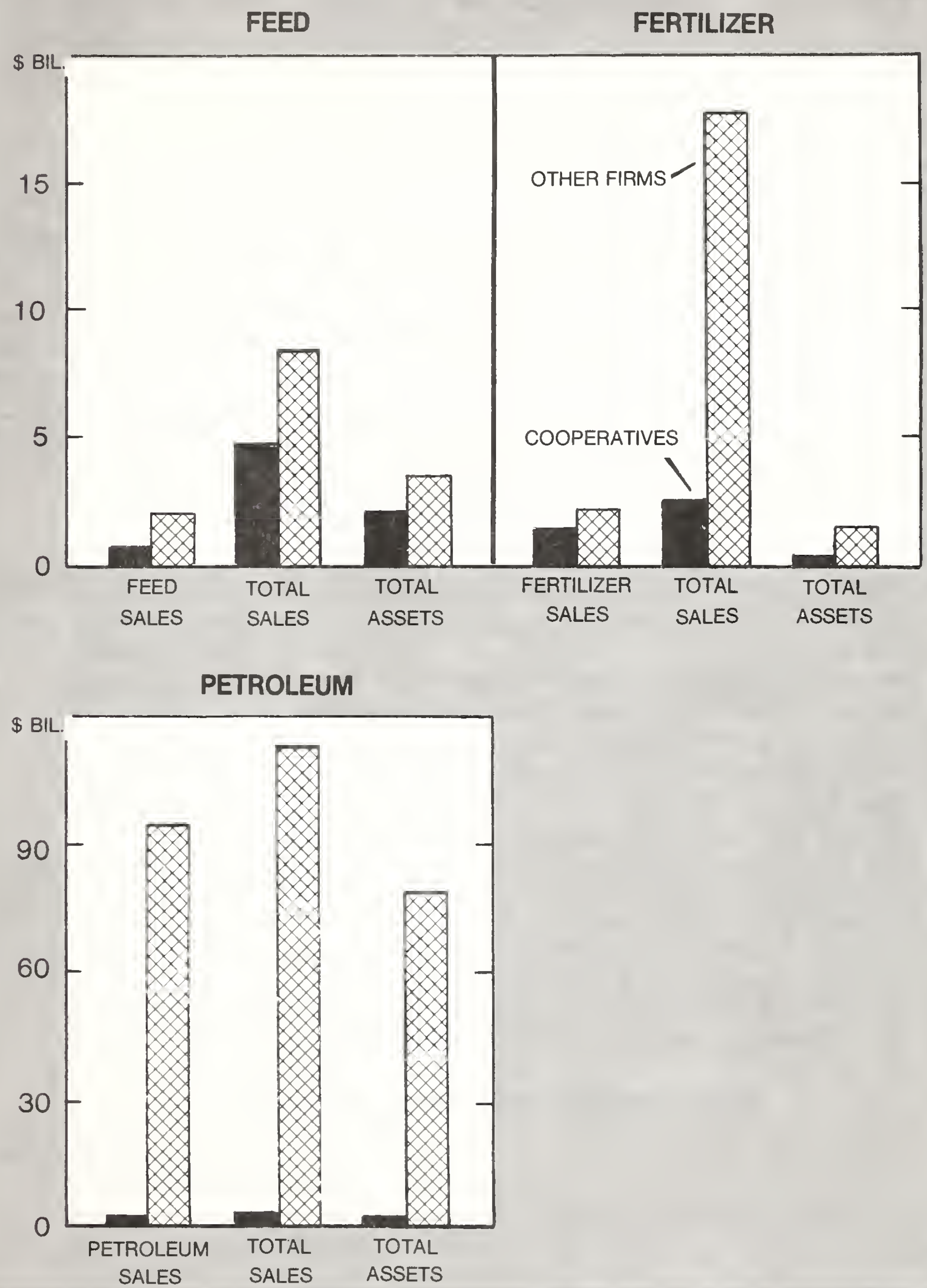


FIGURE 2 -- SALES AND ASSETS OF FOUR COOPERATIVES AND FOUR NONCOOPERATIVE FIRMS REPORTING LARGEST SALES OF THREE FARM SUPPLIES IN 1975



GROWTH OF COOPERATIVES IN SEVEN INDUSTRIES

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In recent years the growth of farmer cooperatives has attracted attention in some quarters. Concern has been expressed where such growth has occurred by merger or acquisition and where cooperatives have integrated their operations in processing or manufacturing.

Representatives of some businesses and government agencies question the role of cooperatives. Some suggest cooperatives should remain small local enterprises and confine operations to assembling and storing of products to be sold to processing firms, or that they should distribute to farmers supplies manufactured by the large integrated companies. Others believe cooperatives growth should be limited to that which can be obtained through internal operations.

Objectives of the Study

This report was prepared to provide information on the actual growth of cooperatives relative to the increase in cash receipts from farm products marketed and supplies purchased by all farmers, and on growth of the largest cooperatives relative to their counterparts in specified industries.

This report updates Part III, Selected Industrial Comparisons, in FCS Information 87, entitled *Cooperative Growth—Trends, Comparisons, Strategy,* by Martin A. Abrahamsen, published March 1973 with data for years 1950-1970.

The report covers the following information for each commodity: (1) Trends in cash receipts from products marketed and in cash expenditures for farm supplies purchased at 5-year intervals from 1950 to 1975, and a few comments on the general trends in each industry during the period; (2) the sales of cooperatives and their share of the farm market during this period; and (3) comparisons of the four cooperatives and the four other firms reporting the largest sales of four farm products and three farm supply items in 1960, 1965, and 1975. These comparisons include such data as sales of the given farm product or farm supply, total sales, total assets, and net worth.

No attempt was made to discuss the factors that affected the growth of each product or industry, or of the cooperatives and other firms handling the product.

Source of Data and Terms Used

Source of Data

Data on cash receipts from farm marketings and cash expenditures for farm supplies were obtained from *Agricultural Statistics* and *Farm Income Situation,* published

[1]Acknowledgment is expressed to staff members Lloyd C. Biser for work in updating the report through 1973 and to Stanley K. Thurston and George C. Tucker for assistance in updating the sections on grain and dairy, respectively.

annually by the former Economic Research Service, now a part of Economics, Statistics, and Cooperatives Service (ESCS), USDA. Data on sales of farm products and farm supplies by cooperatives were obtained from *Statistics of Farmer Cooperatives*, published by Farmer Cooperative Service, now also part of ESCS.

Information on the four largest cooperatives and four largest other firms marketing the four specified farm products and handling three farm supplies was obtained from annual reports and published releases, and from stock prospectuses and other information filed with the Securities and Exchange Commission.

Terms and Comparisons Used

Net Sales of Cooperatives—These are the sales remaining after deducting intercooperative business which was included in gross sales. Such sales, however, are reported at various levels of operation. Local cooperatives operate at the first handling stage which consists of assembling, storing, and selling of products. Others semiprocess or process part or all of their products, thus adding value to them. Some of the larger cooperatives sell in wholesale or terminal markets and a few sell some products at retail to consumers.

Cooperatives' Share of the Market—To compare cooperatives' share of the farm products sold, an estimate of the amounts cooperatives pay to farmers is needed for comparison with total cash receipts from farm marketings by all farmers. This estimate was made by deducting from net sales of cooperatives the estimated value added from processing and marketing margins. These margins may appear low for some products but it should be kept in mind that processing often is done by federated cooperatives for local cooperatives, and that the federation sales are eliminated as intercooperative business. Thus the value added or marketing margins are excluded in determining payments to farmers in this report.

In the case of the supply purchasing cooperatives, net sales are almost entirely at the retail level and primarily to farmers. After eliminating nonfarm sales and those for farm home and family use, the remainder was compared with total cash expenditures for supplies for farm production use.

Four Largest Cooperatives and Other Firms—These businesses were not always the same ones in each of the years covered in this report because of changes due to growth and mergers. Likewise, uniform or comparable data were not always available for all organizations.

Sales of a specified farm product or supply by each group of cooperatives and other firms (investor-owned or proprietary) were not entirely comparable because of the level at which their sales occurred. Some cooperatives marketed products in the whole or nonprocessed form while many of the other firms sold processed or manufactured products or foods. Or they sold a much larger proportion in international trade. Sales of farm supplies of the two groups were largely at wholesale or manufacturer levels, hence more comparable.

Sales of major farm products by some of the other large companies were difficult to estimate because annual reports included them in broad categories such as "food" or "agricultural products." Likewise, "agricultural chemicals" in some cases may have included more than fertilizers, and "feed division" sales may have included more than feed.

Total sales of the largest investor-owned firms were more diversified or conglomerate in nature than those of the cooperatives. Nevertheless such comparisons serve to bring into perspective the size, diversification and integration of cooperatives' counterparts.

Grain

The two major classes of grain are: Food grains that include wheat, rice, rye, and buckwheat; and feed grains that consist of corn, sorghum grains, oats, and barley. Soybeans, peanuts and flax are not grains as such but are included in this report.

Grain may be marketed as whole grain, or it may be processed and marketed in a variety of processed forms. When marketed as grain, the functions of buying, assembling, storing, drying, blending, and selling are performed primarily by country elevators, subterminals and terminal elevators, and exporters. The major processors of grain are flour millers, corn wet millers, breakfast food manufacturers, soybean processors, and animal feed manufacturers.

Trends in Farm Cash Receipts And Industry Operations

Cash receipts from all grain sales increased more than fivefold from 1950 to 1975, receipts from the sales of all crops nearly quadrupled, and receipts from the sales of all farm products more than tripled during the 25-year period (table 1). A substantial portion of the increase in farm cash receipts was from 1970 to 1975. In 1975, cash receipts from the sale of grain constituted 30 percent of total cash receipts from all farm products and 59 percent of crop cash receipts compared to 18 percent and 40 percent, respectively, in 1950 (table 2).

Sales of food grains—wheat, rice, and rye—remained rather constant from 1950 until 1970, but sales more than quadrupled from 1970 to 1975. Wheat accounted for roughly 86 percent of all food grain sales in both 1974 and 1975.

Receipts from the sale of feed grains—corn, oats, barley, and sorghum grains—increased roughly 40 percent from 1950 to 1960; 35 percent from 1960 to 1970; and then increased 270 percent between 1970 and 1975. Receipts from the sale of corn constituted roughly 78 percent of feed grain sales in 1975.

Sales of oil-bearing crops—soybeans, peanuts and flaxseed—more than doubled from 1950 to 1960; more than doubled from 1960 to 1970; then increased about 250 percent from 1970 to 1975. Soybean sales accounted for roughly 89 percent of all sales of oil-bearing crops in 1975.

A number of important changes and trends have occurred in the grain marketing industry in recent years. Additional storage has been built at both the local and terminal levels. Much effort has been devoted to building export business. Increased attention has been given to transportation, including introduction of unit train shipments, adding of water transportation equipment, adjusting to abandonment of branch rail lines, and coping with numerous increases in freight rates. Numerous soybean processing plants have been built and much grain drying equipment has been installed, and there have been substantial capital outlays for dust and pollution equipment.

Trends in Cooperative Grain Marketing

About 1,965 cooperatives handled food grains, feed grains, and soybeans to some extent in 1975. This was 807, or nearly 30 percent, less than the number handling grain in 1950.

As indicated in table 3, there was only a 3 percent decline in the number of cooperatives handling grain between 1950 and 1970. However, the number of cooperatives handling grain dropped nearly 27 percent between 1970 and 1975.

Table 1—U.S. farm cash receipts from grain sales, selected years—1950 through 1975

Year	Food grains[1]	Feed grains[2]	Oil bearing crops[3]	All grains
		Million dollars		
1950	1,941	[4]2,143	935	5,019
1955	1,990	[4]2,555	1,131	5,676
1960	2,469	[4]3,025	1,364	6,848
1965	2,041	3,152	2,170	7,363
1970	1,982	4,077	3,188	9,247
1975	8,347	11,161	7,920	27,428

[1]Includes wheat, rice, and rye.
[2]Includes corn, oats, barley, and sorghum grains.
[3]Includes soybeans, peanuts, and flax.
[4]Feed grain sales for 1950-55-60 include sales of hay.

Source: *Farm Income Situation*—various issues.

Table 2—Cash receipts from sale of grains in relation to receipts from all crops and all farm products in specified years

Year	Cash receipts from sale of:			Percent grains sales were of:	
	Grains[1]	All crops	All farm products	All crops	All farm products
		Million dollars		*Percent*	
1950	5,019	12,410	28,512	40.4	17.6
1955	5,676	13,523	29,556	42.0	19.2
1960	6,849	15,208	34,154	45.0	20.0
1965	7,363	17,392	39,350	42.3	18.7
1970	9,247	19,636	49,231	47.1	18.8
1975	27,428	46,661	89,563	58.8	30.6

[1]Includes *food* grains—wheat, rice, and rye; *feed* grains—corn, oats, barley, and sorghum grains; and *oil crops*—soybeans, peanuts, and flaxseed.

Source: *Farm Income Situation*, ERS—various issues.

The decline in number of grain marketing cooperatives was in large part a result of mergers, acquisitions, and consolidations.

The net grain sales of cooperatives increased from $1.4 billion in 1950 to $14 billion in 1975, an increase of nearly tenfold. As indicated in table 3, the major portion of this increase in grain sales occurred between 1970 and 1975.

The cooperative share of the grain market at the farm level, first sale, increased only moderately from 1950 to 1960. However, during the next 15 years, 1960 to 1975, the cooperative share of the market increased substantially from 30.7 to 44.2 percent (table 3).

Regional Grain Cooperatives

Eighteen regional cooperatives—14 primary regionals and 4 interregionals—marketed grain in both 1974 and 1975. These 18 regionals operated 83 terminal and subterminal elevators in 1974 and 1975.[2]

The local cooperatives generally do not have a formal commitment to sell their grain to a particular regional association. Consequently many locals sell a significant volume outside cooperative channels. The volume of grain handled by regional grain cooperatives has averaged about 1.6 billion bushels during 1973-75 (table 4). This is nearly a 40 percent increase over the volume handled in 1970.[3] These regionals handled 23 percent of the grain marketed by farmers in 1975.

Developments in the last decade include the formation of two interregional cooperatives for handling exports and the establishment of two new producer grain marketing programs designed to give growers more direct control over their grain from farm to domestic or foreign markets. These programs involve acreage commitments by growers and pooling operations by local and regional cooperatives.

Comparison of Four Cooperatives and Four Other Firms With Largest Grain Sales in 1975

Characteristics of Cooperatives

The four regional cooperatives reporting the largest sales of grain in each of the four selected time periods derived 85 percent or more of their revenue from the sale of grain. The same four cooperatives had largest grain sales in both 1970 and 1975. Three also were the largest in 1960 and 1965.

The largest cooperative handling grain in 1975 based on dollar volume serves the North Central and Western regions of the country. It serves about 465 member local cooperatives and operates about 145 line elevators, 17 terminal or subterminal elevators with a storage capacity of about 48 million bushels, a durum wheat mill, 3 malt plants, 3 dry edible bean plants, a soybean plant, and a linseed oil plant. It derives about 65 percent of its sales from whole grains, 25 percent from processed grain products, and the remaining 10 percent from sales of feed, farm supplies, and building materials. The association also manufactures and distributes feed from 11 mills and operates a chain of lumber yards in the Upper Midwest.

The second ranking grain marketing cooperative is located in the heart of the win-

[2]FCS Service Report R50, "Regional Grain Cooperatives 1974 and 1975," Stanley K. Thurston, p. 1. Includes storage at eight soybean plants, and excludes the facilities of several feed mills.

[3]Ibid. pp. 1-9.

Table 3—Number of cooperatives handling grain, and cooperative share of grain market at farm level—selected years, 1950 through 1975[1]

Fiscal year[2]	Grain sales by cooperatives: Number handling	Net sales[3]	Less marketing margins[4]	Estimated value at farm level[5]	U.S. cash receipts from grain sales[6]	Cooperative share of market at farm level
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	2,772	1,446	4	1,388	5,040	27.5
1955-56	2,737	1,705	4	1,637	5,768	28.4
1960-61	2,723	2,260	5	2,147	6,990	30.7
1965-66	2,636	2,929	5	2,783	7,837	35.5
1970-71	2,691	3,980	6	3,741	10,001	37.4
1974-75[7]	1,965	14,090	6	13,245	29,977	44.2

[1]Grains handled include wheat, rice, and rye; corn, oats, barley, and sorghum grains; soybeans, peanuts and flax.
[2]For fiscal years ending between July 1 and June 30 of following year.
[3]Net sales excludes intercooperative business.
[4]Estimated. These margins represent value added and handling charges incurred by cooperatives directly serving farmers.
[5]Estimated cash receipts received by farmers for grain sales to cooperatives.
[6]These figures are the "weighted" average grain receipts for the 2 calendar years that correspond to the fiscal years indicated for cooperatives. For example, calendar receipts for 1950 were given a weight of 2 and 1951 receipts a weight of 1 in comparing them with the fiscal year of cooperatives ending any time between July 1, 1950, and June 30, 1951.
[7]Preliminary.

Table 4—Total farm grain sales—amount sold by regional cooperatives, and percent of farm sales handled by 14 regional grain cooperatives, fiscal year ending 1970 through 1975[1]

Fiscal year ending	Crop years	U.S. farm sales[2]	Regional cooperative sales[3]	Regional coops' sales as a percent of farm sales
	Years	*Million bushels*		*Percent*
1970................	1969-70	6,300	1,118	17.7
1971................	1970-71	5,886	1,165	19.7
1972................	1971-72	7,229	1,205	16.7
1973................	1972-73	7,212	1,624	22.5
1974................	1973-74	7,942	1,559	19.6
1975................	1974-75	6,776	1,561	23.0

[1]Includes following grains: wheat, corn, oats, barley, sorghum, soybeans, rye, and flax.
[2]Reflects crop years closely corresponding to fiscal years.
[3]Data for fiscal years 1970, 1971, and 1972 are approximate.

Source: FCS Service Report 150.

ter wheat growing area of the Midwest. This association was formed in 1968 by the merger of four regional grain marketing cooperatives. In 1975 this association had 1,144 member cooperatives. Although this association derived most of its income from grain sales, it is an important processor of high protein food products and has extensive grain storage and handling facilities. It had storage space for about 110 million bushels of grain at its 15 terminal elevators. In 1977 this association became a subsidiary of a large regional farm supply-marketing cooperative.

The cooperative that ranked number three in grain sales is located in the Cornbelt. It marketed corn, soybeans, and small grains for 230 local member cooperatives in 1975. It operates 6 terminal elevators with a storage capacity of about 3.5 million bushels. This association is a member-owner of two interregional associations—one with facilities for loading grain at a port on the Gulf and one for barging grain and fertilizer on the Mississippi River.

The fourth largest cooperative in grain marketing volume serves some 325 member cooperatives in the central part of the country. It handled grain through 6 terminal elevators with a storage capacity of more than 13 million bushels. It operates a grain division, a soybean milling division, and an auditing division.

Characteristics of Other Firms

The four other (noncooperative or proprietary) firms handling the largest volume of grain in 1975 have dominated domestic grain merchandising and export operations since World War II. Estimates indicate these organizations conducted about 40 percent of all domestic grain transactions above the local elevator level in 1975, and accounted for about 75 percent of all U.S. grain exports.[4]

The same four firms had the largest grain sales in both 1975 and 1970 and their ranking was the same in both years.

All four grain firms are considerably larger than the ordinary business organization. The following excerpt from *The Washington Post* states: "...The largest of the four companies would have ranked 12th in 1975—right behind International Telephone and Telegraph—if it were ranked among the 500 largest industrial firms in America as compiled by Fortune Magazine...."[5] It has accounted for about a fourth of the U.S. grain export market in recent years. It is a multinational company and has plants and/or offices in 38 foreign countries. The organization is highly diversified; it is a major producer of rock salt, molasses, and various types of polyesters. It operates a barge line on the inland waterways, has a small fleet of ocean-going vessels, as well as a small fleet for use on the Great Lakes. A wholly owned subsidiary is one of the largest feed manufacturers in the United States.

The second largest grain firm also handles about a fourth of the world's international grain shipments and accounted for approximately 25 percent of the U.S. grain exports in recent years. This organization has a multinational operation and has offices and/or plants in 44 countries. It operates 18 terminal elevators in the United States, has three foreign affiliates, and six wholly owned subsidiaries. The firm is highly diversified. Through its various subsidiaries, it has become a leading manufacturer of livestock feeds, frozen foods, bakery products, leather goods, and pet foods. And it is also engaged in the integrated production of broilers, turkeys, and hogs in the Midwest.

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[4] Information on the four firms is limited. Three are privately held and therefore do not have to disclose information on their operations. Sources of information used in this report are grain trade periodicals and various other sources.

[5] Washington Post, Tuesday, October 12, 1976.

The third largest grain firm has accounted for about 15 percent of U.S. grain exports in recent years. It maintains offices in 11 foreign countries. It has a fleet of more than 1,000 leased hopper cars and more than 150 barges as well as several ships on charter. Although grain transactions accounted for nearly 60 percent of the organization's total revenue in 1975, it was also engaged in cotton merchandising, chemicals, flooring, termite control, insurance, and the buying, selling, and rental of apartment buildings.

The smallest of the four other grain firms accounted for about 10 percent of U.S. grain exports in recent years. It operates 19 terminal elevators in the United States and Canada. This organization maintains offices in 80 foreign countries and conducts worldwide operations in commerce and finance. In 1975, it had 7 foreign affiliated companies and 11 subsidiaries in the United States and Canada.

Financial Comparisons

Accurate comparisons of the four largest grain marketing cooperatives and four largest other grain firms are not possible because of lack of data on the latter group. Information used was obtained from trade periodicals and therefore fragmentary or estimated in some cases.

Grain Sales—The four largest cooperatives had combined grain sales of about $3.2 billion in 1975, or about 350 percent more than in 1970. Grain sales were not available on the four largest other firms (table 5).

Total Sales—The combined sales of the four largest cooperatives were $3.8 billion, equal to only 24 percent of the combined sales of $15.9 billion for the four other grain firms in 1975. This compared with 20 percent in 1970 and 28 percent in 1960.

Total Assets—Combined assets of the four cooperatives was $681 million in 1975, equal to 28 percent of those of the four other firms. Assets of the cooperatives increased 500 percent, compared with an increase of about 600 percent for the other firms from 1970 to 1975.

Net Worth—The combined net worth of the four cooperatives was $228 million in 1975, equal to 38 percent of that of the four other firms. From 1970 to 1975 net worths of the cooperatives increased 115 percent, compared with about 100 percent by the other firms.

Summary

1. Off-farm sales of grain have increased in absolute amounts and relative to the sales of all other farm products in the past 25 years. In 1950 grain accounted for about 18 percent of all farm product sales; in 1975 it accounted for nearly 31 percent. The marketing facilities of cooperatives and proprietary firms handling grain have expanded sufficiently to handle the increased volume.

2. The production of oil bearing crops—primarily soybeans—has increased enormously since 1950. In that year, cash receipts from the sale of oil bearing crops amounted to $935 million; in 1975 they totaled $7.9 billion, an increase of more than 800 percent. This large increase in the volume of soybeans produced has led to a greatly increased need for processing facilities.

3. The cooperative share of the grain market at the farm level—first sale—has increased substantially in the past 25 years. In 1975 cooperatives handled about 40 percent of all grain at the farm level, compared with 28 percent in 1950.

4. The four cooperatives reporting the largest grain sales in 1974-75 were not nearly as diversified as were the top four other grain firms. Therefore, fluctuations in the

grain volume handled from year to year had more effect on the cooperatives than it did on the four highly diversified and integrated other firms.

5. The four largest cooperatives had *total* sales equal to only 24 percent of those of the four largest other grain firms in 1975. This compared with 28 percent in 1960. Data on grain sales separately were not available from the other firms.

6. The four largest cooperatives had 28 percent as many assets and 38 percent as large net worth as the four largest other firms in 1975. This was a slight increase over earlier periods.

Fruits and Vegetables

Fruits and vegetables are grown to some extent in many parts of the United States. However, the six States of California, Florida, Arizona, Washington, New York, and Michigan account for a large part of the commercial fruit production. And a large proportion of the commercial vegetables are produced in the seven States of California, Florida, Idaho, Washington, Ohio, New York, and Maine.

Trends in Farm Cash Receipts And Industry Operations

Total sales of fruits and vegetables at the farm level amounted to $8.6 billion in 1975. This was 18.4 percent of all crop receipts and 9.6 percent of the receipts farmers received for all farm products (table 6).

The four most important fruits grown in the United States in 1975 were oranges, apples, grapes, and peaches—with receipts amounting to $692 million, $585 million, $553 million, and $290 million, respectively. The four vegetables producing largest cash receipts were potatoes, tomatoes, dried beans, and lettuce, with sales amounting to $1.2 billion, $938 million, $407 million, and $365 million, respectively.

Farm receipts from the sale of fruits and vegetables increased 228 percent during the 25-year period—1950 to 1975 compared with an increases of 278 percent from the sale of all crops and 214 percent from the sale of all farm products.

Increases in receipts from all farm product sales were particularly rapid from 1970 to 1975. Receipts from fruits and vegetable sales increased 82 percent, receipts from all crop sales were up by 138 percent, and receipts from the sale of all farm products increased by 82 percent.

In recent years the growing of vegetables has shifted out of some areas such as the Eastern Shore of Maryland and Virginia where soybeans largely have replaced tomatoes. Suburbanization has forced the relocation of many acres of fruit trees in some areas.

Since World War II the processing of fruits and vegetables has significantly increased, especially in the frozen food segment of the industry. At the same time, the number of firms has decreased but each is larger. Prepackaging of fresh products also increased during the period.

Trends in Cooperative Marketing

In general, fruit and vegetable marketing cooperatives assemble, wash, grade, package, and market fruits and/or vegetables in their fresh form, but probably 15-20 percent in 1975 were engaged in some form of processing. For the most part, these were the larger associations; some were well enough established in the trade to market their processed products under their own private labels. Moreover, some of the larger fruit marketing

Table 5—Selected comparisons of four cooperatives and four other firms with largest grain sales—specified years

Financial comparison and year	Four cooperatives	Four firms	Cooperatives as a percent of firms
	Million dollars		*Percent*
Grain			
1960	540	---	---
1965	635	---	---
1970	917	---	---
1974	3,240	---	---
Total sales			
1960	642	[1]2,300	28.0
1965	668	n.a.	---
1970	960	[1]4,725	20.3
1974	3,768	[2]16,400	23.0
Total assets			
1960	134	[1]530	25.3
1965	216	n.a.	---
1970	253	[1]1,018	24.8
1975	681	[2]2,440	28.0
Net worth			
1960	75	---	---
1965	79	---	---
1970	106	300	35.3
1975	228	[2]594	38.4

[1]Figures apply to only 3 firms—data on 4th firm not available.
[2]Data are for 1974.

Table 6—Farm cash receipts from sale of fruits and vegetables—specified years

Year	Farm cash receipts from sale of:					Fruits and vegetables as percent of:	
	Fruits	Vegetables[1]	Total fruits and vegetables	All crops	Total farm products	All crop receipts	All farm product receipts
	Million dollars					*Percent*	
1950	[2]1,188	1,436	2,624	12,356	28,461	21.2	9.2
1955	[2]1,276	1,683	2,959	13,523	29,490	21.9	10.0
1960	[2]1,473	1,935	3,408	15,090	33,999	22.6	10.0
1965	1,540	2,374	3,914	17,392	39,350	22.5	9.9
1970	1,902	2,826	4,728	19,636	49,231	24.1	9.6
1975	3,239	5,369	8,608	46,661	89,563	18.4	9.6

[1]Includes potatoes, melons, dry beans, and peas.
[2]Includes receipts from sales of tree nuts in *Farm Income Statistics* for these years.

Source: *Farm Income Situation*—July 1965; *Farm Income Situation*—July 1968; *Farm Income*—July 1971; *State Farm Income Statistics*—Aug. 1976.

cooperatives have been active in the export market, accounting for about one-third of all fruit exported by the United States in recent years.

Some of the fruit and vegetable marketing cooperatives handle only one commodity. Other associations handle a group of related products, such as citrus fruits, while others handle a varied assortment of fruit and/or vegetable products. Thus, few have diversified into handling of other farm or food products.

In 1974-75, 436 fruit and vegetable cooperatives reported net sales of $2.73 billion (table 7). After deducting an estimated $737 million for marketing and processing margins or value added, the remaining $1.99 billion paid to farmers was 24.8 percent of total farm cash receipts from all fruits and vegetables that year. This was about the same percentage as in 1950 but less than in 1965.

In 1950, 951 fruit and vegetable cooperatives in the United States had net sales of $702 million. Thus, during the next 25 years the number of these cooperatives decreased 54 percent but their sales of fruits and vegetables increased 289 percent.

Comparison of Four Cooperatives and Four Other Firms With Largest Sales of Fruits and Vegetables in 1975

Characteristics of Cooperatives

The processing of fruits and vegetables by cooperatives is a manifestation of vertical integration inasmuch as it allows growers to maintain control over their products one additional step forward in the marketing channels. Each of the four large fruit and vegetable cooperatives have well and favorably known private labels, and all have well-developed merchandising programs for their products in national markets. Three of the four largest cooperatives in 1975 also were the largest in 1970.

The cooperative reporting the largest sales of fruit and vegetables in 1975 was located on the southern California coast. Approximately 8,000 citrus growers in California and Arizona are members of the parent organization. These growers also are members of about 100 local associations that do the picking, grading, and packing of the fruit. These locals in turn are members of 20 district exchanges. The cooperative processed about 40 percent of its citrus volume in 1975. The remainder was sold as fresh fruit, about three-fourths on domestic markets and one-fourth on export markets. An affiliated cooperative purchases about $30 million worth of grower supplies and packaging materials each year for members.

The cooperative ranking second in fruit and vegetable sales was located on the central California coast and marketed a total of 15 canned fruit and vegetables in 1975. However, the raw products for its processing and marketing operations were grown in widely separated areas. Sweet corn, green beans, and sweet peas were produced by member growers in south central Wisconsin. Canning peaches were grown in the Sacramento Valley of California; tomatoes were produced in the coastal valleys. Canning pears were grown on California's north coast, and other fruits and vegetables were produced in the Salinas Valley and the vast delta regions of California. The cooperative has a majority interest in a cooperative can manufacturing plant.

The cooperative ranking third in fruit and vegetable sales specialized in production of grapes. It had approximately 2,000 members who produced grapes in seven widely separated areas of the United States—New York, Pennsylvania, Ohio, Michigan, Arkansas, Missouri, and Washington. The cooperative has a marketing subsidiary which processes

Table 7—Sales of fruits and vegetables by cooperatives, and their share of the market at the farm level—specified years—1950-51 through 1970-71

Fiscal year[1]	Cooperative transactions				U.S. farm cash receipts from sales of fruits and vegetables[4]	Coop-eratives share of market at farm level
	Number coop-eratives	Net sales of fruits and vegetables[2]	Less marketing margin[3]	Estimated value at farm level		
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	951	702	15	597	[5]2,624	22.7
1955-56	740	722	20	578	[5]2,959	19.5
1960-61	697	941	24	715	[5]3,408	21.0
1965-66	577	1,432	25	1,074	3,919	27.4
1970-71	475	1,641	25	1,231	4,878	25.2
1974-75	[6]436	2,730	27	1,993	8,040	24.9

[1]For fiscal years ending between July 1 and June 30 of following year.

[2]After eliminating intercooperative business between local and regional cooperatives.

[3]Includes assembling, handling, washing, grading, packaging, and processing charges of cooperatives directly serving farmers. Does not include charges for value added at regional cooperative level.

[4]These figures are the "weighted" average U.S. fruit and vegetable receipts for the 2 calendar years that correspond to the fiscal year indicated for cooperatives. For example, calendar receipts for 1950 were given a weight of 2 and 1951 receipts a weight of 1 in comparing them with the fiscal year of cooperatives ending anytime between July 1, 1950, and June 30, 1951.

[5]In the *Farm Income Situations* for 1950, 1955, and 1960, fruit sales include sales of tree nuts, and vegetable sales include sales of dry peas and dry beans. Therefore, U.S. farm receipts for fruits and vegetables during these years are not entirely comparable with data in later years.

[6]Number in 1973-74 because data for 1974-75 not available.

and markets a variety of grape and nongrape products in the United States and in some 60 other nations.

The cooperative association ranking fourth in fruit and vegetable sales was located on the central California coast. It was well diversified and canned 14 varieties of fruits and vegetables. In terms of sales, peaches, tomatoes, pears, olives, and apricots were the most important products. This association has a minority interest in a cooperative can manufacturing plant.

Characteristics of Other Firms

The four other firms reporting the largest sales of fruits and vegetables in 1975 were also largest in 1970, 1965, and 1960, but not in the same order. The four largest in 1975 had from 60 to 80 percent of their sales in the processing and marketing of these products. The largest of the four firms derived about 80 percent of its total revenue and the second derived about 60 percent of its revenue from the sale of fresh and processed fruits and vegetables. In the two remaining proprietary firms, slightly more than 70 percent of their total revenue came from vegetables and canned fruit juices and drinks.

The four proprietary firms have integrated backward into the ownership of farmland rather substantially in recent years in order to supply their requirements for raw products. All four firms have well-known and reputable private label products supported by well-developed marketing programs.

The 1975 operations of two of the four other firms were larger and more diversified. Each reported total sales of about $1 billion in 1975. In addition to selling fresh and processed fruits and vegetables, the two firms, through subsidiaries, were engaged in the operation of cafeterias; contract food services to schools, hospitals, and other institutions; and operated refrigerated warehouses, banana boats, and tuna transports. They also operated several can-manufacturing plants, manufactured swimming pool equipment, operated a chain of department stores on the West Coast, operated a trucking line, and were engaged in the sales and distribution of heavy equipment. In addition, they had large real estate holdings in California and Hawaii.

Operations of the two smaller firms were not nearly as diverse. In addition to selling fresh and processed fruit and vegetables, they processed meat products, operated several can-manufacturing plants, were involved in a citrus grove operation in Florida and operated a fast food chain.

Financial Comparisons

Fruit and Vegetable Sales—The four cooperatives derived all their revenue from the sale of fresh and processed fruits and vegetables in each of the 4 years (table 8). It was

Table 8—Total sales, sales of fruit and vegetables, total assets and net worth of the four cooperatives and the four other firms reporting largest sales of fruits and vegetables in specified years

Item and year	Four cooperatives	Four other firms	Cooperatives as a percent of other firms
	Million dollars		*Percent*
Fruit & vegetables sales			
1960	368	879	41.9
1965	439	[1]1,165	37.7
1970	561	[1]1,634	34.3
1975	984	2,308	42.6
Total sales			
1960	368	977	37.7
1965	439	1,294	33.9
1970	561	1,851	30.3
1975	984	3,081	31.9
Total assets			
1960	143	650	22.0
1965	185	922	20.1
1970	260	1,429	18.2
1975	491	2,031	24.2
Net worth			
1960	61	407	15.0
1965	82	507	16.2
1970	94	607	15.5
1975	150	884	17.0

[1]In 1960, 1965 and 1970 the four proprietary firms broke their total sales down into only three or four major categories. Consequently, it was not possible to segregate fruit and vegetable sales from the sales of other products in a precise manner. The authors of the 1970 report estimated that fruit and vegetable sales accounted for about 90 percent of total sales.

estimated that sales of fresh and processed fruits and vegetables accounted for about 90 percent of total sales of the four other firms in 1960, 1965, and 1970 but for 75 percent in 1975.

The four cooperatives' combined sales of fruits and vegetables increased by about 167 percent during the 15-year period, 1960 to 1975, compared with 163 percent for the four proprietary firms.

Total Sales—The four largest cooperatives' total sales of $984 million in 1975 were equal to 32 percent of those of the four other firms. This compares to 38 percent in 1960.

Cooperative sales increased 243 percent from 1960 to 1975, while those of the other firms increased 212 percent.

Net Margins—The fruit and vegetable cooperatives have no meaningful net margins on marketing operations. They generally pool growers' products and make periodic payments to them. These payments, consisting of advances and final settlements after expenses, do not differentiate between product value and income from processing or other services performed. This provides no basis for comparison with other business firms.

Total Assets—Combined assets of the four cooperatives totaling $491 million were 24 percent of those of the four other firms in 1975. The assets of the four cooperatives increased 243 percent from 1960 to 1975, compared to an increase of 212 percent for the four other firms.

Net Worth—Combined net worths of the four cooperatives of $150 million were equal to 17 percent of the net worths of the four other firms in 1975. The net worths of the four cooperatives increased by 146 percent during the 15-year period, compared to an increase of 117 percent for the four other firms.

Summary

1. Farmers received $8.6 billion from the sale of fruits and vegetables in 1975; this was more than three times the amount received by farmers for fruits and vegetables in 1950. Sales of fruits and vegetables accounted for 9.6 percent of all farm sales in 1975 compared to 9.2 percent in 1950.

Fruits and vegetables are produced to some extent in most areas of the United States; however, most of these products grown for sale are produced in selected areas of nine States.

2. In 1975 a total of 436 cooperatives had fruit and vegetable net sales of $2.7 billion. After deducting value-added from processing and marketing margins, the cooperative share of the fruits and vegetable market at the farm level was about 25 percent. This was a slight increase over their share in 1950 and a little less than 1965.

3. The number of cooperatives marketing fruits and vegetables declined from 951 in 1950 to 436 in 1975, a drop of 54 percent. Dollar volume of products sold, however, increased almost four times.

4. The combined fruit and vegetable sales of the four largest cooperatives were about 43 percent as large as those of the four largest other firms in 1975. This was almost the same percentage as in 1960.

Total sales of the cooperatives, however, were 32 percent of the four other firms in 1975 compared with 38 percent in 1960. These data indicate greater diversification in operations of the noncooperative firms.

5. The four cooperatives with largest sales of fruits and vegetables had only 24 percent as many assets and 17 percent as large net worth as did the four other firms in 1975. These percentages have changed little since 1960.

Milk and Other Dairy Products

Trends in Farm Cash Receipts And Industry Operations

Farmers' cash receipts from milk and other dairy products were $9.9 billion in 1975—almost twice those in 1965 and 2.5 times those in 1950. Such receipts were 11 percent of the total receipts from all farm products in 1975 compared with 13 percent in both 1965 and 1950. Dairy receipts have constituted 23 to 26 percent of total farm receipts from animal and poultry products during this period.

The dairy industry has changed greatly during the past two decades. The trend has been toward large-scale operations by both plants and producers. At the same time, the number of farms reporting milk cows and the number of milk cows has declined sharply. Following record high milk production in 1964, the annual volume declined from 127 billion pounds to 115 billion pounds—less production than in 1950 (table 9).

Dairy herds are becoming larger and the use of labor-saving equipment on farms is increasing. Since the mid-1950's, there has been an almost complete shift from can to bulk assembly in most fluid milk markets. The chore of milking has been reduced by use of pipeline milkers, bulk tanks, and automated feeding and cleaning equipment.

Fluid milk plants are being modernized to handle large volumes more efficiently. Distribution has shifted from glass bottles to paper cartons and plastic containers and from home delivery to wholesale outlets. Food chains are moving into fluid milk packaging, and other wholesale outlets are insisting on milk packaged under their private labels. With improved roads, both raw milk in bulk and packaged milk products can be readily transported over wider areas.

Manufacturing plants are being modernized to handle larger volumes of milk and cream more efficiently. They are also developing new products and new techniques for handling existing products. The assembly of non-Grade A milk is being shifted from can to bulk, permitting delivery to fewer plants.

During this period, the number of plants making butter declined 88 percent. Also the number of plants processing fluid milk products declined 81 percent (table 10).

With fewer plants, the average output per plant has generally increased sharply (table 11). Evaporated milk plants were an exception. They made moderate increases in size, but since the late 1950's have maintained a relatively constant average volume.

Table 9—Farms reporting milk cows, number of milk cows, volume of milk produced, and volume sold to plants and dealers as whole milk for five-year intervals, 1950 through 1975

Year	Farms reporting milk cows	Milk cows on farms[1]	Milk production	Milk sold to plants and dealers[2]
	Thousands	*Million*	*Billion pounds*	
1950	3,648	22	117	74
1955	2,936	21	123	91
1960	1,837	18	123	104
1965	1,108	15	124	113
1970	647	12	117	110
1975	445	11	115	110

[1]Average number during year.

[2]Milk sold as whole milk.

Milk at the farm is divided into two grades—Grade A and manufacturing grade. Grade A milk is produced under strict sanitary conditions of a Grade A milk inspecting program. While production requirements for marketing manufacturing grade milk are less demanding, the trend is toward higher standards approaching those of Grade A milk. Estimates indicate that the percentage of milk sold to plants and dealers as Grade A has increased from 67 percent in 1960 to 69 percent in 1965, 74 percent in 1970, and 80 percent in 1975.

Purchases of Grade A milk by plants and dealers are generally made at prices according to use made of milk. The higher Class I price is paid for milk used in certain fluid milk products. A lower price at about the level for manufacturing grade milk is paid for Grade A milk used in producing manufactured milk products (table 12). Generally farmers are paid a marketwide pool price based on milk utilization.

Since 1962, both producer prices and cash receipts for milk sold to plants and dealers have increased while volume sold has remained within 3 percent of the annual average.

Trends in the value of dairy products shipped by manufacturing establishments has been generally upward. An exception is butter which fluctuated between 1954 and 1972 (table 13). The largest dollar increases in products shipped were in fluid milk products and cheese.

Trends in Cooperative Marketing

About 550 farmer cooperatives had estimated gross dairy sales of about $9.4 billion and net sales (after eliminating intercooperative business) of $8.4 billion in 1975 (table 14). Net sales of dairy products by cooperatives have more than quadrupled since 1950, when they totaled $1.9 billion.

In 1975 cooperatives' payments to producers amounted to about 77 percent of all farm cash receipts for dairy products. This compares with 48 percent in 1950 (table 14). However, as pointed out later, their share of total milk at the plant processing and manufacturing level was much smaller.

Cooperatives handled an increased quantity of raw whole milk, either by physical receipt or by bargaining transactions, moving up from 58 billion pounds in 1957 to 76 billion pounds in 1964 and 83 billion pounds in 1973. In terms of share of the market at the farm level, they handled 59 percent of all milk sold to plants and dealers in 1957, 67 percent in 1964, and 76 percent in 1973. In the Grade A sector, they handle about 81 percent. About 55 percent of the manufacturing grade milk is marketed by cooperatives.

In 1973, almost 63 percent of the milk handled by cooperatives was sold as raw whole milk to other business corporations. Much of the milk was delivered directly from farms to the various market outlets.

At the plant level, cooperatives share of total processing and manufacturing was 22 percent in 1957, 29 percent in 1964 and 28 percent in 1973. And, their share of the retail market is less than one percent for any dairy product.

With the shift to bulk assembly of Grade A milk, dairy cooperatives have greatly expanded supply services to fluid milk plants. They have increasingly assumed responsibility for handling surplus Grade A, assuring deliveries of high quality milk to fluid milk plants according to their need, and for directing the movement of milk to minimize milk hauling costs.

Table 10—Number of plants processing selected dairy products between 1950 and 1975

Year	Butter	Natural cheese[1]	Evaporated milk[2]	Nonfat dry milk	Fluid milk products[3]
			Number		
1950	3,060	2,158	122	459	8,195
1955	2,343	1,789	92	461	6,726
1960	1,659	1,419	72	442	5,328
1965	1,152	1,209	59	372	3,743
1970	662	963	42	219	2,215
1975	366	839	30	153	[4]1,565

[1]Excludes full skim American except for 1975.
[2]Unskimmed, case goods. In 1975 condensed milk plants also included.
[3]Plants operated by commercial processors.
[4]Estimated.

Table 11—Average volume of selected products processed per dairy plant, 1950, 1955, 1960, 1965, 1970, and 1975

Year	Butter	Natural cheese	Evaporated milk	Nonfat dry milk	Fluid milk products[1]
			Thousand pounds		
1950	453	552	23,627	1,920	4,423
1955	590	764	27,445	3,045	6,250
1960	828	1,401	30,240	4,114	8,810
1965	1,148	1,452	28,964	5,357	13,696
1970	1,828	2,286	28,998	6,595	23,744
1975	2,688	[1]3,299	[1]30,897	6,545	34,792

[1]Estimated.

Table 12—Prices paid for specified uses and grades of milk, 3.5 percent fat basis, and cash receipts for milk sold to plants and dealers for five-year intervals, 1950 through 1975

Year	Class I (fluid use)	Grade A[1]	Manufacturing grade[1]	All milk[1]	Cash receipts
		Dollars per hundredweight			*Billion dollars*
1950	4.86	4.06	2.85	3.59	2.89
1955	5.19	4.30	2.94	3.81	3.64
1960	5.48	4.52	3.07	4.04	4.37
1965	5.39	4.48	3.21	4.09	4.77
1970	6.94	5.92	4.56	5.55	6.30
1975	- - -	8.86	7.48	8.59	9.65

[1]1975 adjusted by butterfat differential based on 92-score butter price, Chicago.

Table 13—Value of product groups shipped by manufacturing establishments—selected years, 1954 through 1972

Product group	1954	1958	1963	1965	1967	1972
			Million dollars			
Creamery butter .	859	802	820	768	836	791
Cheese, natural and processed .	702	762	1,070	1,172	1,534	2,754
Condensed & evaporated milk ...	560	557	600	636	791	826
Dry milk products	317	421	504	549	632	880
Ice cream and ices	954	1,138	1,210	1,264	1,274	1,519
Fluid milk & related products	4,315	5,577	6,017	6,156	6,603	7,663
Total	7,707	9,257	10,221	10,545	11,670	14,433

Table 14—Number of dairy cooperatives, sales of dairy products, and cooperative share of market at farm level—selected years, 1950-75

Fiscal year	Cooperative activities				U.S. farm cash receipts from sale of dairy products[4]	Cooperative share of market at local level
	Cooperatives marketing milk & dairy products[1]	Net sales[2]	Less marketing margins[3]	Estimated value at local or farm level		
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	2,072	1,933	8	1,778	3,719	48
1955-56	1,931	2,539	9	2,310	4,212	55
1960-61	1,609	3,240	10	2,916	4,760	61
1965-66	1,273	3,833	11	3,411	5,037	68
1970-71	847	5,442	12	4,789	6,533	73
1974-75[5]	550	8,376	13	7,287	9,445	77

[1]Includes bargaining associations.

[2]After eliminating intercooperative business.

[3]Estimated handling, processing, and manufacturing margins (value added) incurred by cooperatives directly serving farmers.

[4]Cash receipts received for calendar years 1950, 1955, 1960, 1965, 1970, and 1974.

[5]Preliminary.

Interest in restructuring dairy cooperatives to deal more effectively with their marketing problems intensified during the 1960's. A wave of dairy cooperative mergers and consolidations began in the mid-1960's and continues at a moderate rate. Much of the merger movement has been directed toward obtaining a continuing market for Grade A milk. Entry of food chains into fluid milk processing and the restructuring of fluid milk operations by multi-market firms have increased the need for cooperatives to deliver very large volumes of raw milk to a few plants and likewise to process large quantities of reserve milk.

New technology has made many small cooperative milk manufacturing plants obsolete. Also, much larger volumes are needed for the new modern plants.

In late 1969, small butter and milk-drying plants faced increased problems from competitive milk prices rising above their ability to pay. The market place has generally continued to establish cheese prices that permit efficient cheese plants to be price leaders in obtaining milk supplies for manufacturing.

Only recently have dairy cooperatives devoted attention to expansion into cheese production. In 1973, cooperatives accounted for about 35 percent of the nation's cheese production. On the other hand, they sold about 85 percent of the nation's dry milk products and 66 percent of total butter production.

Cooperatives have not been heavily involved in packaging and distributing fluid milk and related products. In 1973, they accounted for about 12 percent of the total volume.

Comparison of Four Cooperatives and Four Other Firms With Largest Sales of Milk and Other Dairy Products in 1975

Characteristics of Cooperatives

Milk and dairy products accounted for 85 percent of the total sales of the four largest dairy cooperatives in 1975. Compared with 1960 the dairy product sales as a share of their total sales has declined more than 10 percent.

The same four cooperatives were included in the group of four largest in both 1960 and 1965, but only two of these were in the 1970 group and only one was in the 1975 group. The other two in 1970 and other three in 1975 were created after 1965 by consolidations. They were formed by dairy farmers choosing to combine existing cooperatives into new cooperatives serving wide marketing areas, including multi-city markets. Many of the predecessor cooperatives began as bargaining associations, but with the shift from can to bulk assembly of milk they took on supply balancing and surplus milk manufacturing operations. This resulted in customer bottling plants obtaining milk supplies tailored to their needs.

The three relatively new dairy cooperatives primarily sold raw whole milk to customer plants and manufactured the reserve milk supply. Although most of their milk came from farmers producing Grade A milk, two of the cooperatives received substantial amounts of manufacturing grade milk from producers in the North Central Region. This milk along with the surplus Grade A was made largely into butter, powder and cheese. The third cooperative located in the Southeast operated a number of fluid milk packaging and distributing plants in addition to its raw milk sales and surplus milk manufacturing operations.

A fourth cooperative located in the North Central Region differed sharply in organizational structure and operations from the other three cooperatives. It began as a

federated organization marketing manufactured products for member cooperatives. In time it expanded into production of a full line of dairy products, and the processing and distribution of a number of other agricultural products and farm supply items. It has shifted away from purely federated organization to include a large number of direct farmer members. It was included among the four largest dairy cooperatives throughout the 1960-75 period.

Characteristics of Other Firms

The same four noncooperative firms had the largest dairy sales in all 4 years considered—1975, 1970, 1965, and 1960, but they were not in the same order. These four other firms with largest dairy sales were quite diversified. Estimated 1975 sales of milk and dairy products accounted for only 39 percent of their total receipts with the range from about 50 percent to 27 percent among them.

The four firms integrated both horizontally and vertically into other related and nonrelated businesses. One manufactured various types of food products and marketed them domestically under four brand names. It also manufactured and distributed aluminum cookware, electrical appliances, roller skates, toys, and plastic and glass containers. It conducted its international operations through subsidiaries in 15 foreign countries.

In addition to manufacturing and distributing a wide variety of food products, a second dairy firm manufactured and distributed soft drinks, cake mixes, wines, convenience foods, snack foods, and detergents. Through various subsidiaries, it operated several food distribution centers and rendering plants, and a leather tanning plant. It also manufactured mobile homes, trailers, luggage, and lawn care and food service equipment. Its international operations included milk and ice cream plants in 10 foreign countries.

A third firm operated four major divisions: (1) Food, (2) dairy products, (3) chemicals, and (4) international. Operations also were conducted through 24 domestic subsidiaries in 9 States and 46 subsidiaries in 22 foreign countries.

The remaining large dairy firm had three major categories of sales: (1) Dairy products, (2) other food and grocery products, and (3) miscellaneous. The miscellaneous group included animal feeds, byproducts, containers, and student supplies. It had 18 domestic and 51 foreign subsidiaries.

The same firms were in the top four based on dairy sales in 1960, 1965, 1970, and 1975.

Financial Comparisons

Dairy Product Sales—In 1975 the combined dairy product sales of the four largest cooperatives amounted to about $3.2 billion, compared with estimated dairy product sales of $5.8 billion for the four largest other dairy firms (table 15). Cooperative volume thus was 55 percent of that of the other firms. This compared with 21 percent in 1960. However, much less of the cooperatives' sales were in the processed or manufactured form than those of the other firms.

From 1970 to 1975 estimated dairy product sales of the four cooperatives increased 77 percent, while such sales of the four other firms increased about 62 percent. Much of this increase can be attributed to the inflation spiral.

Estimated 1960 dairy product sales for the four other business firms accounted for about 75 percent of their total sales. By 1970, such sales were about 50 percent, and by 1975 they had declined to 39 percent of their total sales due to diversification into other industries.

Table 15 —Selected comparisons of four largest cooperatives and four largest other businesses handling dairy products, 1960-75

Item and year	Four cooperatives	Four other businesses	Cooperatives as a percent of other businesses
	Million dollars		*Percent*
Dairy product sales			
1960	[1]555	[1]2,613	21.2
1965	[1]675	[1]2,890	23.4
1970	[1]1,793	[1]3,604	49.8
1975	3,197	5,829	54.9
Total sales			
1960	584	3,484	16.8
1965	750	4,624	16.2
1970	2,049	7,208	28.4
1975	3,771	14,991	25.2
Total assets			
1960	126	1,361	9.3
1965	150	2,056	7.3
1970	493	3,391	14.5
1975	723	6,044	12.0
Net worth			
1960	71	904	7.8
1965	83	1,375	6.0
1970	214	2,017	10.6
1975	286	3,247	8.9

[1]Dairy product sales of the four largest dairy cooperatives were estimated at 95 percent of total sales in 1960, 90 percent in 1965 and 87.5 percent in 1970. For the four largest other businesses, dairy product sales were estimated at 75 percent of total sales in 1960, 62.5 percent in 1965, and 50 percent of total sales in 1970, and 39 percent in 1975.

Although the four large dairy cooperatives are highly specialized in dairy marketing, there was some movement toward a more diversified program. Between 1960 and 1975 estimated dairy product sales as a percentage of total sales declined from 95 percent to 84 percent.

While the other business firms with the largest dairy business have expanded their sales largely in nondairy industries, the cooperatives have concentrated on growth through a restructuring of dairy operations.

Although the four largest cooperatives operate dairy plants to produce dairy products, their sales of raw whole milk to other business firms is estimated at about two-thirds of their total volume handled. Thus, the value of dairy products shipped by the four largest cooperatives from manufacturing and processing plants would be about one-fifth of the value of such shipments by the four other dairy business firms.

Total Sales—The combined sales of all products of the four largest cooperatives were about $3.8 billion which were equal to only 25 percent of the combined volume of the four largest other firms in 1975 (table 15). This compared with 28 percent in 1970 and 17 percent in 1960.

Total Assets—Combined assets of the four largest dairy cooperatives were $723 million in 1975, or only 12 percent as large as those of the four other firms (table 15). The cooperatives' assets increased about 47 percent from 1970 to 1975, while those of the four other dairy firms increased more than 78 percent.

From 1960 through 1965, the four other dairy business firms increased their assets by 51 percent compared with 19 percent for the four large dairy cooperatives. During the next 5 years, the four other dairy business firms further increased their assets by 65 percent. At the same time, a restructuring of dairy cooperatives created four large organizations with assets 229 percent greater than those of the four largest cooperatives in 1965. Even so, their 1970 assets were only 14.5 percent of those of the four business firms, and by 1975 they had declined to 12 percent.

Net Worth—The four cooperatives' combined net worth of $286 million was only 9 percent of that of the four other firms in 1975 (table 15). Trends in net worth for the four dairy business firms and the four dairy cooperatives from 1960-70 were similar to their trends in assets. The increase from 1970 to 1975 was 34 percent for the cooperatives and 61 percent for the noncooperative firms.

The four cooperatives' net worth was approximately 40 percent of their total assets in 1975; the net worth to assets ratio of the four noncooperative dairy firms was about 54 percent.

Summary

1. Milk marketing is unique in that there must be a continuing market for a dependable flow of product to plants, stores and consumers. The daily (or every other day) quantities are so small that few farmers can afford a separate milk hauling arrangement. Thus dairy farmers generally find that some degree of cooperation with others is a marketing necessity.

2. Present technology has rendered many cooperative dairy plants obsolete. A new cooperative structure is being developed to implement new technology and more adequately serve the market place. Other dairy firms are implementing new technology in a restructured plant system.

3. Movement of food chains into fluid milk packaging and expanded use of private label distribution by others have altered the market outlook of dairy firms and resulted in changes in their marketing strategies.

4. The large noncooperative dairy firms are moving increasingly into nondairy industries. Growth of the large dairy cooperatives has been mainly through mergers with other dairy cooperatives. The resulting cooperative structure is favorable for implementing new technology and for developing a more efficient milk marketing program.

5. Cooperative expansion into areas formerly served by other dairy firms is the result of market necessity: The firms wanted to shut down. Examples include the handling of surplus milk in many fluid milk markets where expected margins on these operations were no longer attractive to other business firms.

6. The major volume of milk processed by dairy cooperatives goes into low margin products such as butter and powder rather than into fluid milk products and related items.

7. From 1950 to 1975 the number of farms selling whole milk declined nearly 88 percent, the number of dairy cows declined by nearly 50 percent, and average production per cow increased by about 95 percent.

8. Farmers' cash receipts from the sale of dairy products increased from $3.7 billion in 1950 to $9.9 billion in 1975. However, dairy products accounted for only 11 percent of farmers' total cash receipts from marketings in 1975 compared with 13 percent in 1950.

9. In 1975 dairymen marketed about $8.4 billion worth of milk and other dairy products through some 550 cooperatives. This was equal to about 77 percent of the value of all milk marketed at the farm level. However, at the plant level in 1973, cooperatives' share of total milk processed or manufactured was only 28 percent, and their share of the retail market was less than 1 percent for any dairy product.

10. The combined dairy products sales of the four largest dairy cooperatives in 1975 were about 55 percent as large as the combined sales of the four largest other firms in 1975. The cooperatives sales of processed and manufacturing dairy products were about one-fifth as large as such sales for the other firms.

Total sales of the four largest cooperatives, however, were only 25 percent as large as the total sales of the four largest other firms. The latter firms were quite diversified and handled a wider variety of products; their sales of dairy products accounted for only 39 percent of their total sales compared to 84 percent for the cooperatives.

11. The four largest cooperatives had only 12 percent as many assets and 9 percent as large net worths as the four largest other firms handling milk and dairy products.

Poultry and Eggs

Both the production and marketing of broilers or fryers, turkeys, and eggs have undergone great changes in recent years.

Trends in Farm Cash Receipts And Industry Operations

Farmers' cash receipts from the sale of poultry and poultry products totaled about $6.6 billion in 1974 (table 16). They accounted for 15 percent of all livestock and livestock product sales and for 7.4 percent of total sales of all farm products that year. Their relative position has not changed much since 1950.

In 1975 farm receipts from such products were: Broilers, $2.9 billion; eggs, $2.8 billion; turkeys, $794 million; and farm chickens, $104 million.

Nearly 3 billion broiler chickens were produced in this country in 1975, about five times the number produced in 1950. Thirty-three States each produced 500,000 or more broilers in 1975; however, the five southern States of Arkansas, Georgia, Alabama, Mississippi, and North Carolina accounted for 62 percent of the total production.[6]

Broiler prices averaged 27.4 cents per pound (live weight basis) in 1950, and averaged 26.3 cents per pound in 1975, only fractionally lower than in 1950. However, broiler prices were depressed for many years; average annual prices plummeted below 20 cents per pound in 1956, and reached an alltime low of 13.3 cents per pound in 1967. The average annual price of broilers did not get above 20 cents per pound again until 1973.

Turkey production has increased dramatically in this country during the past quar-

[6]Broiler production did not reach 1 billion birds per year until 1954 and exceeded 2 billion birds per year for the first time in 1962. Since 1970 approximately 3 billion birds have been produced each year.

ter century. In 1975 more than 124 million turkeys were produced or nearly three times the number reported in 1950.

In 1975, 29 States each produced 100,000 or more birds and the five widely separated States—Minnesota, California, North Carolina, Texas, and Missouri—accounted for 57 percent of the total production.[7]

From 1951 through 1960, the average annual price received by producers varied from a low of 31.4 cents per dozen in 1959 to a high of 47.7 cents per dozen in 1951 and 1953.

In the following 10-year period, the average annual prices received for eggs varied from a low of 31.2 cents per dozen in 1967 to a high of 40 cents in 1969.

In 1973 the average annual price received by producers jumped to 52.5 cents per dozen and remained at about that level through 1974 and 1975.

Vertical integration along with a shift to large production units characterize the expansion that has taken place in the poultry industry since 1950. The blueprint for this integrated production and marketing approach was developed in the broiler industry, and later adapted to turkey and egg enterprises.

Table eggs are produced to some extent in each of the 50 States. Six States—California, Georgia, Arkansas, Pennsylvania, Alabama, and North Carolina—accounted for more than 41 percent of the 64 billion eggs marketed in 1975.

The number of hens and pullets of laying age on farms was 340 million in 1950 compared to 277 million in 1975. However, the rate of lay increased from 174 eggs per hen in 1950 to 232 in 1972.[8]

In general, these large-scale complexes specialize in production and marketing of one type of poultry product, that is, broilers, turkeys, or eggs, but some of the larger conglomerate firms have become prominent in all poultry product segments, and some have entered the food service business.

In 1975 almost all the broilers and a large proportion of the turkeys and table eggs marketed in this country were produced by large, integrated production units.

Trends in Cooperative Marketing

The structure and function of cooperatives handling poultry and eggs changed materially between 1950 and 1975. The majority of cooperatives handling poultry and eggs prior to 1950 merely assembled these products from a host of small farm production units. This assembly function was usually performed as a sideline of a dairy or feed cooperative, and no additional poultry marketing services were performed.

Cooperative growth and expansion in the poultry industry came about through the creation of large-scale, integrated production and processing units. These production units were located within a relatively small area, with a modern and efficient feed mill at the center, and with poultry and/or egg processing facilities nearby.

The high degree of coordination necessary to realize the economies of scale inherent in these large integrated production and processing complexes was instrumental in shifting production into new geographical areas. As a consequence of these developments, many

[7]The average annual price per pound received for turkeys, live weight basis, was about the same in 1975 as it was in 1950, 34.8 and 32.9 cents per pound, respectively. Turkey prices declined to less than 30 cents per pound (annual average) for the first time in 1954 and continued to decline most every year for the next 7 years, reaching a low of 18.9 cents per pound in 1961. Turkey prices fluctuated slightly each year for the next 11 years and averaged 21.8 cents per pound for the period 1962-72. Since 1973 growers have received an annual average price of 33.7 cents per pound.

[8]Although the number of table eggs marketed increased from 52 billion in 1950 to 62 billion in 1975, the prices received by egg producers varied to a much greater extent.

of the cooperatives that handled poultry and eggs as a sideline in the 1950s and early 1960s did not handle these products in 1975.

The number of cooperatives handling poultry and eggs declined from 760 in 1950 to 167 in 1975. During the same time span, cooperative sale of poultry and eggs increased from $263 million to $763 million—a threefold increase (table 17).

After deducting value-added from processing and marketing margins, the cooperative share of the poultry and egg market at the farm level was 8 percent in 1975. There has been little change in their share of the market since 1950.

Cooperatives' net sales of these products increased 190 percent while total farm cash receipts from them increased 137 percent.

Comparison of Four Cooperatives and Four Other Firms With Largest Sales of Poultry and Eggs in 1975

Characteristics of Cooperatives

The four regional cooperatives reporting the largest sales of poultry and eggs in 1975 were all highly integrated and all except one had quite diversified operations. The same four cooperatives had the largest poultry and egg sales in both 1970 and 1975, and three of the four also were in the largest group in 1970.

The association with the largest sales of poultry and eggs has a highly integrated poultry division which is involved in the production and marketing of some 150 million broilers a year in the southeastern part of the country. This division contracts with growers for the production of hatching eggs, chicks, and broilers and then markets dressed birds in domestic and foreign markets. It operates breeder flocks, 12 hatcheries, 6 feed mills, and 5 poultry processing plants. The cooperative also contracts with growers to produce pullets and eggs and markets more than 20 million dozen eggs a year.

The cooperative's marketing division markets a number of other farm products for members such as peanuts, pecans, soybeans, and other grains. The cooperative's agricultural services division supplies feed, seed, fertilizer, propane, and general supplies and equipment to farmers through a system of local affiliated cooperatives and a few retail branches and dealers. Products marketed for farmers account for about 70 percent of the organization's total sales and farm supplies make up the remainder. This cooperative is a member and part owner of three interregional cooperatives for procuring supplies and one for marketing foods. It has two wholly owned subsidiaries—one domestic and one foreign.

The cooperative ranking second in poultry and egg sales specialized in the marketing of dressed turkeys processed by its 10 member cooperatives and grower agribusinesses located in the West and Midwest. This federated organization has approximately 70 sales offices and/or distributors scattered throughout the United States, and annually markets about 200 million pounds of dressed turkeys and turkey products. The principal volume consists of whole-bodied turkeys, but the 10 plants of the association's members also provide ovenready products and one further-processing facility produces institutional and consumer turkey products.

The third largest cooperative provides diversified and integrated services for farmers in the South. It contracts for the production of breeder flocks, hatching eggs, broilers, and commercial eggs. It processes and markets the broilers and eggs in domestic and international markets. Sales of these products account for about one-third of its total volume. The association operates three hatcheries, three poultry processing plants, five egg

Table 16 —Farm cash receipts from the sale of poultry and poultry products—selected years, 1950 to 1975

Year	Cash receipts from sale of:							Percent of poultry and egg sales of:	
	Broilers	Turkeys	Eggs	Farm chickens	Total poultry and eggs	All livestock and livestock products	All farm products	All livestock and livestock product sales	All farm products sales
				Million dollars				*Percent*	
1950.....	533	266	1,579	413	2,791	16,105	28,512	17.3	9.8
1955.....	844	326	1,777	226	3,173	15,967	29,556	19.9	10.8
1960.....	1,014	371	1,738	105	3,228	18,909	34,154	17.1	9.5
1965.....	1,218	421	1,788	86	3,513	21,958	39,350	16.0	8.9
1970.....	1,462	492	2,169	104	4,227	29,595	49,231	14.3	8.6
1975.....	2,895	794	2,791	104	6,584	42,902	89,563	15.3	7.4

Source: Data for 1950, 1955, and 1960 were obtained from Agricultural Statistics, 1972. Data for 1965-1970, and 1975 were obtained from Farm Income Statistics, 1968-1971, and 1976.

Table 17—Sales of poultry and poultry products by cooperatives and cooperative share of market at farm level—selected years, 1950 to 1975

Fiscal year[1]	Cooperative activities				U.S. farm cash receipts from sale of poultry and poultry products[5]	Cooperative share of market at farm level
	Cooperatives handling poultry and eggs	Net sales[2]	Less marketing margins[3]	Estimated value at farm level[4]		
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	760	263	15	224	2,839	7.9
1955-56	662	351	18	288	3,224	8.9
1960-61	567	424	24	322	3,292	9.8
1965-66	396	438	26	324	3,513	9.2
1970-71	226	600	28	432	4,303	10.0
1974-75	[6]167	763	28	549	6,739	8.1

[1]For fiscal years ending between July 1 and June 30 of the following year.
[2]After eliminating intercooperative business.
[3]Includes handling and processing costs incurred by cooperatives directly serving farmers.
[4]Estimated amount received by farmers for poultry and eggs sold to cooperatives.
[5]Average of cash receipts received in the two calendar years which correspond to fiscal years indicated for cooperatives.
[6]Number in 1973-74; data for 1974-75 not available.

handling plants, and eight feed mills. It also markets rice and soybeans for farmers and supplies a large volume of farm production supplies and equipment to its member local cooperatives. It has three subsidiaries and is a member of four interregional supply or marketing cooperatives.

The cooperative ranking number four in poultry and egg sales also was well diversified and integrated in marketing farm products and providing farm supplies for member farmers and local cooperatives in the North Central States. It processes and markets from 75 to 90 million turkeys and from 18 to 20 million dozen eggs annually. It has a unified system of turkey production-marketing that coordinates breeder flocks, fertilized eggs, hatcheries, poults, feed, producer services for growing and finishing birds, procurement, processing, and marketing. The association also provides similar services for egg producers—from ready-to-lay birds to a final market for eggs. The association also is a major processor and marketer of dairy products and soybeans, and handles a substantial volume of feed and other farm supplies. Sales of farm products account for approximately three-fourths of the association's revenue and farm production supplies for the remainder. This regional associaton is a member and part owner of eight interregional cooperatives—six for obtaining supplies, one for marketing food products, and one for transporting farm products.

Characteristics of Other Firms

The poultry and egg operations of the four other firms were completely integrated, and all but one of these firms were engaged in three or more lines of business. Three of the four firms in 1975 also were the largest in 1973, but none were in this top group in 1970. One, however, had become a part of a large conglomerate.

The largest of the four other firms was a holding company and conducted all business through five wholly owned subsidiaries, or divisions. Ranked by order of sales, the five divisions were: Food products, industrial products and chemicals, petroleum products, insurance and financial services, and ladies foundation garments. The food products division accounted for about 80 percent of total sales in 1975, and the division's poultry and egg sales constituted approximately 10 percent of total sales.

The second large firm was also a conglomerate and conducted its operations through 10 wholly owned subsidiaries. Its business operations were divided into three major groups or divisions—poultry products, flour and bakery supplies, and animal feed and pet food. Poultry was the largest of the three divisions and accounted for 55 percent of total sales in 1975.

The third other firm specialized in the production, processing, and marketing of broilers and eggs. It conducted its far flung operations through nine wholly owned subsidiaries located in five southern States. It marketed iced and frozen broilers and cooked poultry to restaurants, hotels, and schools; and also prepared and marketed TV dinners for the retail and institutional trade.

The remaining firm listed its sales under four major headings: Flour and prepared bakery mixes, animal feed products, poultry products, and other consumer food products. Sales of poultry products accounted for about 20 percent of this firm's total sales in 1975.

Financial Comparisons

Poultry and Egg Sales—Combined sales of poultry and eggs of the four largest cooperatives amounted to slightly more than $521 million in 1975, about 51 percent of the

combined poultry sales of $1 billion reported by the four investor-owned firms (table 18). This was a substantial decline from their relative position in 1973.

Total Sales—Total sales of the four cooperatives reporting the largest sales of poultry and eggs in 1975 were about $2.2 billion, or slightly more than 37 percent of the total sales of the four proprietary firms.

Net Margins—The four cooperatives reported combined net margins of $65 million in 1975, equal to 36.5 percent of those realized by the four other firms. This would indicate a rate of return on cooperative sales of 2.9 percent, and a rate of return on total assets of approximately 9 percent.[9]

The four noncooperative firms reported combined net margins of $178 million in 1975 which meant a return on sales of 3 percent, and a return on total assets of 15.4 percent.

Total Assets—The four cooperatives had combined assets of $724 million 1975, equal to 63 percent of those of the four other firms.

Net Worth—The four cooperatives had a combined net worth of $286 million in 1975. This was about 48 percent of the combined net worth of the four other firms.

Summary

1. Farm receipts from poultry and eggs were about $6.6 billion in 1975, equal to 15 percent of all farm receipts from livestock, dairy, and poultry, and 7 percent of receipts

[9]Net margins before payment of State andFederal income taxes.

Table 18—Selected comparisons of four cooperatives and four other firms reporting largest sales of poultry and poultry products in fiscal 1973 and 1975

Item and year	Four cooperatives	Four other firms	Cooperatives as a percent of other firms
	Million dollars		*Percent*
Poultry sales[1]			
1973	351	524	67.0
1975	521	1,032	50.5
Total sales			
1973	1,717	5,210	32.9
1975	2,227	5,951	37.4
Net margins[2]			
1973	34	141	24.1
1975	65	178	36.5
Total assets			
1973	536	1,415	37.9
1975	724	1,158	62.5
Net worth			
1973	218	644	33.8
1975	286	600	47.7

[1]Such sales totaled $123 million in 1960, $152 million in 1965, and $228 million in 1970. Similar data on other firms were not available.

[2]Before payment of income taxes.

from all farm products. Broiler receipts totaled $2.9 billion, eggs were $2.8 billion, and turkeys $794 million.

The relative percentage of these products since 1950 has changed very little.

2. A total of 167 cooperatives had net sales of $762 million from poultry and eggs in 1975. After deducting value-added from processing and marketing margins, the cooperatives' share of the farm market was 8 percent. This figure was 8 percent in 1950 and 10 percent in 1970.

3. Poultry and egg sales of the four largest cooperatives amounted to about $521 million in 1975, this was about 51 percent of the combined poultry and egg sales of the four largest noncooperative firms in this business. This was a substantial decline from their relative position in 1973.

Total sales of all products by the four cooperatives were about 37 percent of that of the other firms.

4. Combined net margins (before income taxes) of the four cooperatives were 37 percent of the net income of the four other firms.

5. Total assets of the four largest cooperatives in 1975 were equal to 63 percent and their net worth was 48 percent of that of the four other firms.

Commercial Feeds

Trends in Industry Operations And Farm Expenditures

Farmers spend more each year for feed than they do for any other farm supply item. In 1975, their expenditures were $12.9 billion; this was nearly four times the amount spent for feed in 1950. Feed purchases in 1975 accounted for approximately 25 percent of current farm operating expenses and for about 17 percent of total production expenses (table 19). In addition to these outright purchases of feed, a number of feed manufacturers and commercial feedlot operators manufactured substantial quantities of feed for feeding their own animals and animals fed on a contract arrangement for others.

A study conducted by USDA in 1969 indicated there were about 7,300 firms in the United States that produced 1,000 or more tons of feed per year. These establishments produced nearly 94 million tons of feed in 1969. The researchers conducting the study estimated that possibly two thirds of this production—63 million tons—entered commercial marketing channels.

Some feed manufacturing firms specialize in the production of complete formula feeds that consist of ground grains, mill byproducts, and the necessary amounts of proteins, minerals, and vitamins. Complete feeds are widely used in the grain deficit areas for feeding dairy cows, and almost entirely in the production of broilers, turkeys, and eggs.

Other mills—located primarily in the Midwest and South—specialize in the production of protein supplements—soybean, linseed, and cottonseed oilmeals. These meals—high in protein content—are intended to be used as a supplement to grain. They are usually mixed with ground grain before feeding to animals.

Rather significant changes have occurred in the feed-manufacturing industry in recent years. These changes are all interrelated and it is difficult to say precisely which was cause and which was effect.

Among the many changes has been the shift in the location of mills. It was due largely to changes in the milling-in-transit privileges and changes in transportation rates; decentralization from large terminal continuous line-mix mills to smaller regional batch-

Table 19—Farmers cash expenditures for livestock and poultry feeds—selected years, 1950 through 1975

Calendar year	Cash expenditures for livestock and poultry feeds	Percent feed purchases were of:	
		Current farm operating expenses	Total production expenses
	Million dollars	*Percent*	
1950	3,283	22.9	16.9
1955	3,880	24.9	17.7
1960	4,923	26.0	18.7
1965	5,749	26.6	18.6
1970	7,068	25.3	17.3
1975	12,902	25.1	17.1

Source: *Farm Income Situation*, July 1968; and *State Farm Income Statistics*, August 1976.

mix mills; preparation of more complete formula feeds containing drugs, minerals, and vitamins; delivery of an increasing proportion of the feed in bulk; manufacture of feed by firms which are also engaged in the contract production of broilers, turkeys, and eggs; manufacture of feed by operators of cattle feedlots; operation of feed mills by grain marketing firms in grain producing areas; and diversification into other lines of business by some of the large, well-known feed milling companies.

In recent years, many firms have shifted their feed manufacturing operations to grain deficit areas in response to the development of large broiler and/or layer operations in the area. As a result, an increasing proportion of the poultry feed is being produced in relatively small mills, and delivered in bulk, direct from mill to farm, in quantities of 20 tons or more.

The shift of the feed manufacturing industry to the South and West is an example of decentralization on the one hand and an attempt to become better oriented with demand on the other. Traditionally, flour mills, terminal elevators, and feed manufacturing establishments were located in grain surplus areas and cities with good transportation facilities, that is, St. Louis, Cincinnati, and Chicago. For many years, the large terminal mills located in such cities manufactured most of the complete formula feeds consumed in the Northeastern and Southeastern States.

Since World War II—and particularly since 1960—many feed manufacturing organizations have diversified to such an extent that the sale of manufactured feeds is no longer their major source of income.

Trends In Cooperative Operations

The number of local cooperatives handling feed has decreased slightly almost every year since 1950. Nevertheless, their net feed sales in 1975 were nearly four times as great as they were in 1950 (table 20).

Feed sales of cooperatives to farmers amounted to $2.6 billion in 1974-75. This was 18.4 percent of the total expenditures all farmers made for feed that year. This was about the same share of the feed market cooperatives had in 1950 when their feed sales were $676 million.

Table 20—Sales of feed by farmer cooperatives and their share of the feed market—selected years, 1950 to 1975

Fiscal year[1]	Cooperative activities: Number coop-eratives handling	Cooperative activities: Net sales[2]	Cooperative activities: Less estimated sales for nonfarm use & sales to other firms	Cooperative activities: Estimated coop-erative feed sales to farmers	Total cash farm expenditures for feed[3]	Coop-eratives share of feed market
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	4,707	683	1.0	676	3,714	18.2
1955-56	4,402	774	1.0	766	3,887	19.7
1960-61	4,412	890	1.0	881	5,022	17.5
1965-66	4,301	1,057	1.0	1,046	6,037	17.3
1970-71	4,078	1,321	1.0	1,308	7,579	17.3
1974-75	[4]3,744	2,587	1.0	2,561	13,902	18.4

[1]For fiscal years ending between July 1 and June 30 of following year.
[2]Excludes intercooperative business.
[3]Average expenditures during the two calendar years which correspond to the fiscal year indicated for cooperatives.
[4]Number cooperatives handling feed in 1973-74. Number handling feed in 1974-75 not available.

Source: *Farm Income Situation.*

Comparison of Four Cooperatives and Four Other Firms With Largest Feed Sales in 1975

Characteristics of Cooperatives

The operations of the four regional cooperatives reporting the largest sales of feed in 1975 were quite diversified and highly integrated. Three of the four largest in 1975 were also in that bracket in 1970. The same four were largest in 1970 and 1965, but only one of the 1970 group was in the top four in 1960.

The cooperative reporting the largest sales of feed in 1975 served patrons in 12 States, and had five subsidiaries. This association manufactured, processed, or purchased almost every type of farm supply—except heavy field machinery. It also marketed several farm products for its patrons. The relative importance of this association's four major sources of revenue in 1975 were: Petroleum products, 36 percent of total sales; feed, 23 percent; other farm supplies, 21 percent; and marketing operations, 20 percent.

The regional cooperative reporting the second largest sales of feed in 1975 conducted the major portion of its business in eight midwestern States. It had 17 subsidiaries and was affiliated with several other cooperative associations. This regional association manufactured, processed, or purchased practically all types of supplies used on a modern farm except heavy field machinery. It also marketed several products for patrons. The relative importance of this regional's major sources of revenue in 1975 were: Fertilizer, 34 percent of total sales; petroleum products, 30 percent; marketing operations, 18 percent; feed, 11 percent; and other farm supplies, 7 percent.

The regional cooperative with the third largest sales of feed in 1975 served a seven-State area in the Midwest, and had several subsidiaries engaged in marketing and supply operations. Through its local member associations, this regional provided its patrons with all the major farm supplies and marketed a wide variety of farm products. Sales of farm supplies accounted for 26 percent of the association's total sales in 1975; feed accounted for 11 percent and other farm supplies for 15 percent. Sales of farm products for patrons—dairy products, eggs, turkeys, and soybeans—accounted for the remaining 76 percent of sales.

The regional cooperative reporting the *fourth* largest sales of feed in 1975 conducted the major portion of its business in five Southeastern States. The association had two wholly owned subsidiaries. This association sold farm supplies to farmers through about 140 local cooperatives; it also marketed a wide variety of farm products for patrons. The relative importance of this association's major sources of revenue in 1975 was as follows: Marketing operations, 78 percent of sales; feed, 11 percent; and other farm supplies, 11 percent.

Characteristics of Other Feed Firms

The operations of the four proprietary firms reporting the largest feed sales in 1975 were completely integrated and highly diversified. Three of these firms were also the largest in 1970. The same four were largest in 1970, 1965, and 1960.

The firm reporting the largest sales of feed in 1975 operated 60 feed manufacturing plants in the United States and 58 in foreign countries, 3 health food plants, 3 dairy food plants; 18 pet food plants—12 in the United States and 3 abroad; and 5 plants for the production of protein foods. The firm also operated 3 hog breeding farms, 3 silo manufacturing plants, 7 grain elevators, and 9 soybean processing plants.

This firm also operated 10 poultry processing plants—2 in the United States and 8 abroad; 9 poultry breeder farms and 3 broiler farms in 8 foreign countries; and 14 poultry hatcheries—3 in this country and 11 abroad. In addition, the firm operated 3 can manufacturing plants and had facilities for the production of mushrooms. The firm also operates a chain of 804 "fast food" restaurants and a chain of 55 "table cloth" restaurants. The firm has four subsidiaries—one in the United States and three abroad. The 1975 sales of this firm were broken down into four broad major groups: Animal and poultry feeds accounted for 36 percent of total sales; consumer products for 29 percent; international operations for 25 percent; and restaurants operations for 10 percent.

The operations of the firm with the *second* largest feed sales were considerably less diversified. This firm operated 39 feedmills—28 in the United States and 11 abroad; and had 9 soybean processing plants—8 in the Midwest and 1 abroad. It operated 12 poultry and food processing establishments in the Midwest and in the South, and had 28 grain elevators in the Midwest. It also had 38 U.S. subsidiaries and 29 foreign subsidiaries. This firm's 1975 sales were broken down into five broad groups. Sales of livestock and poultry feed accounted for approximately 25 percent of total sales; refined soybean oil and processed foods for 16 percent; soybean meal and unrefined soybean oil for 24 percent; grain merchandising for 26 percent; and poultry operations for 9 percent.

The firm reporting the third largest feed sales operated 36 mills and/or food plants in the United States and 4 in Canada in 1975. This firm also had 20 subsidiary plants in foreign countries. The firm's sales in 1975 were broken down into six major catorgories:

Domestic grocery sales, 37 percent of total sales; toys and recreational products, 17 percent; animal and poultry feeds, 16 percent; international grocery sales, 16 percent; chemical products, 7 percent; and restaurant operations, 7 percent.

The firm ranking fourth in feed sales in 1975 also conducted a diversified operation. It operated 17 feedmills in 11 States; and 28 dairy plants for the processing and manufacture of evaporated milk, ice cream, and instant dairy products. It had 5 fruit and vegetable canning plants, 7 plants for the manufacture of pet foods, and 13 facilities for the manufacture of tin cans and other containers. In addition, this firm processed potatoes at three facilities; manufactured "special purpose" paper and operated 21 plants for the manufacture of student supplies. The firm had 18 domestic subsidiaries in 6 States, and 51 subsidiaries in 25 foreign countries. This firm broke its 1975 sales down as follows: Animal and poultry feeds accounted for about 10 percent of total sales; dairy products for 44 percent; food and grocery department for 38 percent; and miscellaneous products for 8 percent.

The four cooperatives and the four noncooperative firms have all undergone an extensive amount of diversification and integration since 1960. However, on the basis of their 1975 operations, the four noncooperative firms have moved further into diversification and integration than the four cooperatives.

Financial Comparisons

Feed Sales—Feed sales of the four cooperatives in 1975 were one-third as great as feed sales of the four other firms (table 21). The feed sales of the four cooperatives tripled between 1960 and 1975. The four other firms did not break their total sales down by major departments in their annual reports of 1960, 1965, and 1970. Consequently, it is not possible to compare the feed sales of the four cooperatives and four noncooperative firms for the above time periods.

Total Sales—Total sales of the four cooperatives amounted to about 57 percent of the other firms' sales in 1975. Total sales of the four cooperatives increased nearly 13 times from 1960 to 1975. Total sales of the four other firms increased less than seven times during the same period.

Net Margins (Before taxes)—In 1975 the net margins of the top four cooperatives were nearly two-thirds as great as those of the four noncooperative firms (table 21). The combined net margins of the four cooperatives increased nearly 19 times during the 15-year period, 1960 to 1975. During the same time the net margins of the four noncooperative firms increased slighly more than six times.

Total Assets—In 1975 the combined assets of the four cooperatives were about 60 percent as great as the assets of the four other firms. The assets of the four cooperatives increased at a much faster rate than the assets of the four noncooperative firms. The combined assets of the four cooperatives were nearly nine times as great in 1975 as they were in 1960. The combined assets of the four other firms increased nearly five times during the same period.

Net Worth—The combined net worth of the four cooperatives was equal to approximately 38 percent of the combined net worth of the four other firms in 1975. The combined net worth of the four cooperatives increased nearly four times during the 15-year period 1960 to 1975. The combined net worth of the four noncooperative firms increased slightly more than five times during the same period.

Table 21—Selected comparison of four cooperatives and four other firms reporting largest sales of feed in specified time periods

Item and year	Four cooperatives	Four other firms	Cooperatives as a percent of other firms
	Million dollars		*Percent*
Feed sales			
1960	226	- - -	- - -
1965	273	- - -	- - -
1970	367	- - -	- - -
1975	679	2,021	33.6
Total sales			
1960	374	1,310	28.5
1965	724	2,110	34.3
1970	1,164	3,646	31.9
1975	4,810	8,402	57.2
Net margins[1]			
1960	16	74	21.6
1965	37	117	31.6
1970	46	263	17.5
1975	300	460	65.2
Total assets			
1960	234	724	32.3
1965	535	1,011	52.9
1970	885	1,532	57.8
1975	2,080	3,443	60.4
Net worth			
1960	175	362	48.3
1965	163	518	31.5
1970	360	839	42.9
1975	697	1,848	37.7

[1]Before payment of income taxes.

Summary

1. Major changes have occurred in the commercial feed industry during the past 25 years. Among the more far-reaching changes have been integration and diversification in the operations of most of the larger feed manufacturers, decentralization and automation of the feed mills, and delivery of an increasing proportion of the feed in bulk.

2. Farmers' expenditures for feed increased nearly four times during the quarter century 1950 to 1975. Feed purchases were and still are the largest single production expense, accounting for 17 to 19 percent of farmers' cash expenditures in each of the five time periods.

3. Farmers bought about $2.6 billion worth of feed through 3,744 cooperatives in 1974-75. The cooperatives sold 18.4 percent of all commercial feeds farmers bought in 1974-75—the same share of the market as in 1950-51.

4. The four top cooperatives in feed had combined feed sales equal to about 34 percent of the feed sales of the top four other firms in 1975.

5. In comparing total operations of the two groups, the top four cooperatives had 57 percent as large total sales, 65 percent as much net margins, 60 percent as many assets, and a net worth 38 percent as large as the top four other firms in 1975.

6. Since 1960 the top four cooperatives have shown greater growth in sales, net margins, and net worth than the top four other firms, but have declined in percentage growth and net worth.

Fertilizer and Lime

Trends in Industry Operations and Farm Expenditures

Expenditures for commercial fertilizer and lime constitute one of the major farm production costs. In 1975, farmers in the United States spent about $6.8 billion for fertilizer and lime (table 22). This was about 53 percent as great as their expenditures for feed, but it was about the same as they spent for hired labor, and for the repair and operation of capital items.

The tonnage of fertilizer used in the United States has increased rather consistently each year since 1940. Annual sales of fertilizer exceeded 10 million tons for the first time in 1942, 20 million tons in 1951, and 40 million tons in 1971. Fertilizer consumption continued to increase each year during the early 1970s—from 39.6 million tons of product in 1970 to 47.1 million tons in 1974. However, in 1975 fertilizer usage in this country declined to 42.5 million tons—the first drop in fertilizer consumption in more than 20 years.[10]

By April 1976, the price of nitrogen fertilizers had declined nearly 40 percent and the outlook for grain prices had improved. Under these more favorable conditions, fertilizer consumption continued its upward trend reaching an alltime high of more than 49 million tons by mid-1976.

Sales of mixed fertilizers and direct application materials did not increase at the same rate from 1960 to 1975. Sales of mixed fertilizer were about 50 percent greater than sales of direct application materials in 1960. By 1975, sales of the two types of fertilizer were about equal.

The consumption of all types of fertilizer increased about 90 percent from 1960 to 1974 (the peak year until 1976). However, during the same time, the consumption of the three primary plant nutrients increased by more than 2½ times—from 2.5 million to 9.3 million tons. This phenomenal increase in plant nutrients was due primarily to the increasing popularity of direct application materials[11] and the use of higher analysis mixed fertilizers.

In recent years there has been a considerable change with respect to the geographic areas of heaviest fertilizer use. Historically, the South Atlantic Region has been the heaviest user of commercial fertilizers. In 1960, slightly more commercial fertilizers were used in the South Atlantic Region than were used in the Corn Belt States—6.1 million tons and 5.2 million tons, respectively. By 1975, consumption had increased to 7.2 million tons in the South Atlantic Region, but sales had increased to 11.4 million tons in the Corn Belt States.[12]

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[10]The decrease in fertilizer consumption in 1975 was due primarily to two factors: (1) An unusually sharp increase in the price of nitrogen fertilizers in the spring of 1975; and (2) the prospect of much lower prices for wheat and feed grains.

[11]Anhydrous ammonia is one of the principal components of the direct application materials. Due to its increasing popularity and its high nitrogen content—82 percent—the use of nitrogen has increased more rapidly than either of the other two primary plant nutrients.

[12]The South Atlantic Region is comprised of eight States—Deleware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, and Florida. The Corn Belt States include Ohio, Indiana, Illinois, Iowa, and Missouri.

Table 22—Farmers expenditures for fertilizer and lime—selected years, 1950 to 1975

Calendar year	Cash expenditures for fertilizer and lime	Percent fertilizer and lime purchase were of:	
		Current farm operating expenses	Total production expenses
	Million dollars	*Percent*	
1950	975	6.8	5.0
1955	1,185	7.6	5.4
1960	1,315	6.9	5.0
1965	1,754	8.1	5.7
1970	2,097	7.5	5.1
1975	6,847	13.3	9.1

Source: *Farm Income*, USDA, ERS, July 1971; and *State Farm Income Statistics*, USDA, ERS, August 1976.

In addition, the fertilizer industry has experienced some drastic changes in structure and ownership during the past two decades. Until the late 1950s, there were basic producers for each of the three primary nutrients. These producers sold their respective products to regional fertilizer companies that in turn used some of the primary nutrients to produce mixed fertilizers and handled the remainder as straight materials. Both the mixed fertilizers and straight materials were eventually sold to independent dealers.

The increasing sales of fertilizer in the United States, the prospect of large export sales under government aid programs, and the high margins realized on liquid nitrogen sales combined to attract the attention of other firms.

By the late 1950s, several major oil companies were already producing anhydrous ammonia as a byproduct of their petroleum operations. And seeking diversification, a number of these firms began to branch out into other phases of the fertilizer industry. Five oil companies acquired phosphate deposits in Florida, and two others leased potash reserves in Canada. Moreover, two major producers of sulphur moved into phosphate production by acquiring reserves in Florida and South Carolina. By 1967, not less than a dozen petroleum companies were basic producers of two of the three primary plant nutrients.

At the same time the well-financed oil companies were getting into the fertilizer business, four of the major old-line fertilizer companies were expanding. As a result, the capacity of the phosphate rock mines jumped from 20 to 39 million tons between 1963 and 1968; anhydrous ammonia capacity soared from 5.1 million to 12.1 million tons; and potash capacity in North America—primarily Canada—jumped from 3.5 million tons in 1963 to 9.6 million tons in 1968.

Although domestic consumption of fertilizer continued to increase at an average annual rate of about 7 percent, foreign sales were only a fraction of those anticipated. This resulted in both excess manufacturing capacity and the overproduction of many fertilizer products. As a consequence, there was a drastic drop in the price of nitrogen fertilizers and a substantial decline in the prices of phosphate, potash, and mixed fertilizers in 1968 and 1969.

Several of the older and less efficient plants were closed and the supply and demand for many fertilizer products came into better balance by 1970. As a result, the prices of most major types of fertilizer had improved by 1971. Following the low fertilizer prices of the late 1960s, international fertilizer prices began to climb in late 1971. By

October 1973, world prices for triple superphosphate and urea had tripled from their previously depressed prices.

Meanwhile, in the United States, government price controls were imposed in August 1971 and fertilizer prices remained low and stable while the differentials between United States and world fertilizer prices widened by the day. The net result was that U.S. exports of nitrogen and phosphate began to climb rapidly by the fall of 1973. In two years, U.S. net exports had more than tripled for nitrogen fertilizers and doubled for phosphate products.

With U.S. farm cash receipts at record levels in both 1973 and 1974, and the decontrol of U.S. fertilizer prices in October 1973, U.S. farmers thereafter were able to compete effectively on the world market for available fertilizer supplies. As a result of this increased demand for fertilizer, limited supplies, and increased energy costs due to the 1973 international oil embargo, fertilizer prices reached an alltime high in April 1975.

Trends In Cooperative Operations

The number of cooperatives handling fertilizer increased rather consistently for many years and reached a high of 4,363 in 1965. Since that time, the number of cooperatives handling fertilizer has declined by roughly 11 percent.

Fertilizer sales of cooperatives increased from $154 million in 1950 to $1.9 billion in 1975—an increase of more than 12 times in 25 years (table 23).

In 1975, cooperatives had about 30 percent of the fertilizer market, compared with 26 percent in 1960 and 15 percent in 1950.

Cooperatives have made considerable progress in integrating their fertilizer operations during the past 25 years. As late as 1950, cooperatives operated several dry mixing

Table 23—Sales of fertilizer and lime by farmer cooperatives and their share of the market—selected years, 1950 to 1975

Fiscal year[1]	Cooperative activities				Cash expenditures for fertilizer and lime by all farmers in the U.S.[2]	Cooperatives share of market
	Number handling	Net sales of fertilizer and lime	Less sales to other firms and nonfarm uses	Estimated sales to farmers		
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	3,521	154	2	151	1,020	14.8
1955-56	4,011	261	2	256	1,176	21.8
1960-61	4,276	361	2	354	1,344	26.3
1965-66	4,363	562	2	551	1,853	29.7
1970-71	4,134	762	2	747	2,512	29.7
1974-75	[3]3,865	1,913	2	1,875	6,335	29.6

[1]For fiscal years ending between July 1 and June 30, of following year.

[2]Average expenditures during the two calendar years which correspond to the fiscal year indicated for cooperatives.

[3]Number handling fertilizer in fiscal 1973-74—Data for 1974-75 not available.

Source: *Farm Income Statistics*, USDA, ERS, July 1975.

plants as well as a small number of plants for producing normal superphosphate. These operations have been replaced for the most part by many smaller bulk blending plants, and plants for the production of concentrated superphosphates and liquid nitrogen.

As of January 1, 1975, the Tennessee Valley Authority (TVA) listed cooperatives as having the following facilities for the production of nitrogen fertilizer: 15 anhydrous ammonia plants, 9 urea plants, and 6 ammonium nitrate plants. They listed the cooperatives as having the following facilities for the manufacture of phosphate fertilizers: 6 plants for the production of "wet process" phosphoric acid, 3 plants for producing concentrated superphosphates, and 3 plants for producing ammonium phosphates.

TVA listed only one cooperative as producing potash. This operation was in New Mexico and went on line in 1975. However, a large interregional cooperative—which is owned by 19 member regional associations—has a financial interest in a large potash mine in Canada. Through this role it has been able to provide its member cooperatives with most of their potash needs.

Some of the large fertilizer manufacturing plants are owned by individual regional cooperatives. Other facilities are owned and operated by the large interregional cooperatives mentioned above.

The designed capacities of cooperatives' anhydrous ammonia, wet process-phosphoric acid, and potash plants, as well as cooperatives' share of such capacities, are shown in table 24.

Comparison of Four Cooperatives and Four Other Firms With the Largest Sales of Fertilizer in 1975

Characteristics of Cooperatives

Three of the four largest cooperatives handling fertilizer in 1975 were also the largest in 1970. Only two of the largest handlers in 1970 were in the top four in 1965 and 1960.

Operations of the cooperative with the largest sales of fertilizer in 1975 were well diversified and integrated for serving a large number of member local cooperatives in the Midwest. The relative importance of the association's five prinicpal lines of business were as follows: (1) Fertilizer sales accounted for 34 percent of its total revenue, (2) petroleum for 31 percent, (3) animal feeds for 10 percent, (4) other farm supplies and services for 7 percent, and (5) the marketing of farm products for the remaining 18 percent. In 1975 the association produced roughly 45 percent of the fertilizer materials it provided for its member-patrons. It owned and operated 5 anhydrous ammonia plants; 1 phosphoric acid plant; 1 plant for the manufacture of concentrated superphosphates; 3 ammonium nitrate plants; and 4 plants for the production of urea. The association has a number of subsidiaries and also is a member-owner of 12 interregional cooperatives.

The cooperative with the second largest fertilizer sales specializes in the manufacturing, processing, and purchasing of fertilizer materials for its member regional cooperatives. In 1975 this interregional association owned and/or operated 4 anhydrous ammonia plants, 2 ammonia nitrate plants, 2 urea plants, 1 large phosphate mine complex, 2 phosphoric acid plants, 2 ammonium phosphate plants, and 2 plants for the production of concentrated superphosphate. It produces more than half of the fertilizer it sells. This association has no subsidiaries. However, it has a minority interest in a potash mine and a nitrogen fertilizer plant in Canada. And it is a member of an interregional cooperative that owns and operates a barge line on the Mississippi River.

The cooperative ranking third in fertilizer sales provided manufacturing and whole-

Table 24—Designed annual capacity of industry and cooperative anhydrous ammonia, wet process phosphoric acid, and potash plants—and cooperative share of rated capacity—selected years, 1950 to 1975[1]

Product and year	Capacity on January 31, 1976: Industry	Cooperatives	Cooperative share
	1,000 tons		*Percent*
Anhydrous Ammonia (NH)			
1950	1,889	---	---
1960	4,100	323	7.9
1965	8,585	1,181	13.8
1970	16,500	3,084	18.5
1975	18,529	3,469	18.7
Wet Process Phosphoric Acid (P_2O)			
1950	---	---	---
1960	1,348	104	7.7
1965	2,984	225	7.5
1970	5,945	1,328	22.3
1975	8,638	1,975	22.9
Potash (K_2O) (U.S. and Canada)			
1950	---	---	---
1960	2,700	---	---
1965	4,695	---	---
1970	11,200	900	8.0
1975	11,704	1,000	8.5

[1]Annual plant capacities are based on 340 days per year of operation.

Source: FCS, Research Report No. 24, *Cooperative Fertilizer Marketing and Manufacturiing, 1950 through 1970;* and *Fertilizer Trends, 1976,* TVA, pp. 35-43 for 1975.

sale supply services to local member cooperatives in three States of the Upper Midwest. Sales in fiscal 1975 were listed under five major headings: (1) Agricultural fertilizer, herbicides, and insecticides accounted for 47 percent of total sales (2) petroleum products for 32 percent, (3) animal feeds for 11 percent, (4) the farm and home division for 7 percent, and (5) the seed division for 3 percent. The association has three wholly owned subsidiaries and it is a member of five interregional cooperatives, one of which is engaged in fertilizer manufacture.

The regional cooperative ranking number four in fertilizer sales manufactures and distributes only fertilizer for member farmers and local cooperatives in the Gulf Coast and Southeastern States. In 1975 the association owned and operated two anhydrous ammonia plants, one ammonium nitrate plant, one urea plant, one phosphoric acid plant, a concentrated superphosphate plant, and began producing potash in the Carlsbad, N.M., area in late 1975. This association has no subsidiaries and was not a member of an interregional cooperative in 1975.

Characteristics of Other Firms

The four noncooperative firms with the largest sales of agricultural fertilizers in

1975 were difficult to determine because these firms manufactured and/or handled a wide range of chemical products and did not indicate their sales for each of the various product lines. The annual reports of most firms showed only sales volume for a few major divisons such as (1) chemical products, (2) petroleum products, (3) fabricating and engineering, (4) industrial products, and (5) consumer products and services. Hence, it was necessary to review chemical and fertilizer trade magazines and consult other sources familiar with the industry to rank the noncooperative firms according to their fertilizer volumes.

Three of the four noncooperative firms with the largest sales of fertilizer in 1975 also had the greatest sales in 1970. However, their order of rank had changed materially. Only two of the top firms in 1970 were in the top four in 1965 and 1960. Mergers were responsible for changes in size.

The noncooperative firm with the largest fertilizer sales in 1975 limited its operations to the manufacture and sale of chemical products. Its sale revenues were listed under three major headings: (1) Fertilizer products accounted for 57 percent of this firm's total sales; (2) industrial products accounted for 34 percent; and (3) industrial chemicals for the remaining 9 percent. This firm had 64 subsidiaries—14 domestic and 50 foreign.

Operations of the firm with the second largest fertilizer sales in 1975 were more diversified than the one discussed above. Sales were listed under three major headings: (1) Industrial chemicals and agricultural fertilizers, (2) petroleum products, and (3) consumer products and services that included a chain of sporting goods stores, a shoe store, and restaurants. Agricultural chemicals accounted for 15 percent of this firm's total sales, industrial chemicals for 36 percent, petroleum products for 4 percent, and consumer products and services for the remaining 45 percent. This firm had 274 subsidiaries in 1975—102 domestic and 172 foreign.

The noncooperative firm with the third highest fertilizer sales was well-diversified and completely integrated. In its annual report, sales were broken down into the following four major groups: (1) Meats and other food products accounted for 71 percent of total sales; (2) agricultural fertilizers, pet foods, and dental supplies accounted for 19 percent; (3) petroleum products for 7 percent; and (4) insurance and other business services accounted for the remaining 3 percent of sales. Its 1975 annual report listed 122 subsidiaries—95 domestic and 28 foreign.

The noncooperative firm that rated fourth in fertilizer sales in 1975 was more diversified than the others and most of its operations were completely integrated. Its annual report for 1975 listed sales under seven major headings: (1) Steel sales accounted for approximately 69 percent of the total; (2) fabricating and engineering accounted for 11 percent; (3) chemicals and fertilizer, 8 percent; (4) transportation subsidiaries, 6 percent; (5) cement and other, 3 percent; (6) international division, 2 percent; and (7) sales of timberland for the remaining 1 percent. The firm reported 26 subsidiaries in 1975—20 domestic and 6 foreign. Three of the latter were engaged in mining and three operated cement manufacturing plants.

As a group, the four proprietary firms were much more diversified than were the four cooperatives. In only one of the noncooperative firms did fertilizer sales account for more than one-half of total revenue in 1975. In the remaining three firms fertilizer sales accounted for approximately 15 percent, 10 percent, and 4 percent, respectively, of their total sales. In contrast, two of the regional cooperatives handled only fertilizer. And fertilizer sales accounted for 47 percent and 34 percent, respectively, of the total sales of the remaining two regional cooperatives. Also, all except one of the cooperatives had substantial investments in interregional cooperative enterprises, such as fertilizer manufacturing,

petroleum production, barge transportation, finance, insurance, and production of farm supplies.

Financial Comparisons

Fertilizer Sales—Because of the phenomenal increase in fertilizer prices between 1970 and 1975, both the cooperatives and the noncooperative firms experienced a greater increase in fertilizer sales than they did in total sales. The combined fertilizer sales of the top four cooperatives in 1975 were equal to about 69 percent of the fertilizer sales of the top four other firms in 1975 (table 25).

Data pertaining to the fertilizer sales of the four proprietary firms in 1960 and 1965 were not available because they were reported with farm chemicals and other farm supplies. However, the fertilizer sales of these four firms increased more than two and one-half times between 1970 and 1975, while cooperative fertilizer sales jumped about four and one-half times.

Table 25—Selected comparisons of four cooperatives and four other firms with largest fertilizer sales—selected years, 1960 to 1975

Year[1]	Four cooperatives	Four other firms	Cooperatives as a percent of other firms
	Million dollars		*Percent*
Fertilizer sales			
1960	113	---	---
1965	2,214	---	---
1970	324	802	40.4
1975	1,443	22,084	69.2
Total sales			
1960	471	3,855	12.2
1965	769	6,081	12.6
1970	1,269	10,019	12.7
1975	2,709	17,943	15.1
Net margins[2]			
1960	16	93	17.2
1965	41	195	21.0
1970	40	541	7.4
1975	436	1,552	28.1
Total assets			
1960	333	1,796	18.5
1965	426	2,758	15.4
1970	832	11,439	7.3
1975	1,685	12,647	13.3
Net worth			
1960	217	928	23.4
1965	227	1,319	17.2
1970	325	5,845	5.6
1975	497	6,996	7.1

[1]Data are for fiscal or calendar year ending in year listed.
[2]Net margins *before payment of income taxes.*

Total Sales—The combined sales of the top four cooperatives were equal to only 15 percent of the sales of the top four other firms in 1975. This compares with 12 percent in 1960. The combined sales of the four cooperatives in 1975 were nearly six times as great as they were in 1960, compared with an increase of five times in the sales of the other firms.

Net Margins (Before Taxes)—The four cooperatives and the four noncooperative firms each experienced a phenomenal increase in their net margins on sales during the 15-year period 1960-1975. However, the net margins of the four cooperatives increased more percentagewise than did those of the four noncooperative firms.

The 1975 net margins of the four cooperatives were equal to 28 percent of those of the four other firms. The net margins of the four cooperatives were 27 times greater than in 1960, while those of the noncooperative firms were about 17 times greater than in 1960.

Total Assets—The total assets of the four cooperatives were equal to 13 percent of those of the other firms in 1975, compared with 18.5 percent in 1960. The total assets of the four cooperatives increased by $1.4 billion, or fivefold from 1960 to 1975. During the same period the total assets of the four other firms increased by $10.8 billion or sevenfold.

Net Worth—The net worth of the four cooperatives increased much less from 1960 to 1975 than did the net worth of the four noncooperative firms. The net worth of the four cooperatives increased by $280 million, about double, while the net worth of the four noncooperative firms increased by $6.1 billion, or about seven and one-half times during this period.

As a result, the net worth of the four cooperatives was only 7 percent of that of the other firms in 1975. This compared with 23 percent in 1960.

Summary

1. The total tonnage of fertilizer used in the United States increased from 24.9 million tons in 1960 to 47.1 million tons n 1974, an increase of nearly 90 percent. However, the tonnage of primary plant nutrients consumed increased at a much faster rate—from 7.5 million tons in 1960 to 19.3 million tons in 1974—or 157 percent. There was a decline in use in 1975, followed by a record use in 1976.

There was also a significant shift in geographical regions, with the heaviest fertilizer consumption moving from the South Atlantic Region to the Corn Belt.

2. During this period there were changes in the type, size, and complexity of fertilizer plants. These changes include a significant increase in the number and capacity of anhydrous ammonia plants and the replacement of normal superphosphate plants by concentrated superphosphate and ammonium phosphate plants. Moreover, the ownership and operation of the major fertilizer plants underwent a major change from independent and specialized fertilizer companies to divisions of multi-product firms or conglomerates.

3. Farmers purchased about $1.9 billion worth of fertilizer and lime through cooperatives in 1974-75. This was about 31 percent of the farm market.

4. The top four cooperatives had fertilizer sales of $1.4 billion in 1975, equal to 69 percent of the fertilizer sales by the four largest other firms in the business. This was a substantial increase over their relative positions in 1970.

5. In other 1975 financial comparisons, the top four cooperatives had only 15 percent of total sales, 28 percent of the net margins, 13 percent of the assets and a net worth only 7 percent of that of the top four other firms.

6. Since 1960 the top four cooperatives have become larger in sales but smaller in net margins, assets, and net worth in relation to the top four other firms handling fertilizer.

Petroleum Products

In recent years, petroleum products have furnished about three-fourths of the nation's energy needs. Consequently, most sectors of our economy are influenced to an important extent by what happens in the petroleum industry. In 1975, the sales of the major petroleum companies amounted to more than $198 billion, or about 11 percent of the total gross national product (GNP) for that year.

Trends In Industry Operations and Farm Expenditures

Companies making up the petroleum industry are much larger than the average business organization in this country. Twenty-eight petroleum companies in 1975 were included in *Fortune* magazine's directory of the 500 largest industrial corporations in the United States. The combined sales of the 28 firms amounted to more than $198 billion—or about 23 percent of the combined sales of the 500 largest industrial corporations in the United States.[13]

The number of major petroleum companies has not changed materially in the past 25 years—ranging from 32 firms in 1960 to 27 firms in 1970. However, the combined sales of the major oil companies have increased as follows: $16 billion in 1950; $52 billion in 1960; $92 billion in 1970; and $198 billion in 1975.

In addition to their large size, the major petroleum companies are nearly all completely vertically integrated, that is, engaged in the production, refining, transportation, and marketing of petroleum products. Moreover, some are well diversified and are active—among other things—in the production and marketing of petrochemical products, and the manufacture and distribution of agricultural fertilizers.

The U.S. domestic demand for refined petroleum products increased considerably during the period 1950 to 1975. Demand was 6.6 million barrels per day in 1950; 9.8 million barrels in 1960; 14.7 million barrels in 1970; and 16.3 million barrels per day in 1975.[14]

The internal combustion engine has been the primary source of power used on U.S. farms since World War II. Consequently, petroleum products have played an increasingly important role in agricultural production during recent years. Approximately 3 percent of the nation's energy is used in agricultural production and in the manufacture of agricultural chemicals and other farm inputs.

[13]Of the top 12 firms listed in the 1975 *Fortune* magazine directory, 6 were petroleum companies. Three of the petroleum firms each reported 1975 sales in excess of $20 billion and the 3 remaining companies reported sales ranging from $10 billion to $17 billion.

[14]The domestic demand for refined petroleum product reached an alltime high of 17.3 million gallons per day in 1973. But due to the Arab oil embargo in late 1973 and early 1974, there was a slight decline in demand in both 1974 and 1975.

The amount and the costs of the various types of energy used in agricultural production in 1974 follow:

Gasoline	3.7 billion gal.	$1,870 million
Diesel fuel	2.6 billion gal.	950 million
LP gas	1.5 billion gal.	450 million
Fuel oil	304 million gal.	40 million
Natural gas	164 billion cu. ft.	100 million
Electricity	32 K.W.H.	830 million
Coal	33,000 tons	2 million
Total		$4,242 million

Source: *Energy and U.S. Agriculture: 1974 Data Base;* Federal Energy Administration and U.S. Department of Agriculture, Sept. 1976.

Expenditures for petroleum products used in farm production operations increased 43.5 percent from 1950 to 1970 and 88 percent from 1970 to 1975. The last 5-year jump resulted from the sharp increase in petroleum prices following the Arab oil embargo during the winter of 1973-74.

Over the past 25 years, farmers' expenditures for petroleum products have constituted an average of about 7 percent of current farm operating expenses, and about 5 percent of total production expenses (table 26).

Trends in Cooperative Operations

Over the years, cooperatives have found it advantageous to integrate their petroleum operations. Starting out at the retail level in the Midwest in the early 1920s, the local petroleum cooperatives soon organized regional wholesale associations to purchase their needs. To assure a dependable source of fuel and to realize additional savings, the

Table 26 —Expenditures by farmers for petroleum products used in agricultural production—selected years, 1950 to 1975

Year	Farmers expenditures for petroleum products	Percent petroleum expenditures were of:	
		Current farm operating expenses[1]	Total production expenses[2]
	Million dollars	*Percent*	
1950	1,192	8.3	6.1
1955	1,403	8.8	6.3
1960	1,484	7.5	5.4
1965	1,567	6.6	4.6
1970	1,711	5.4	3.8
1975	3,209	6.3	4.3

[1]Includes expenditures for purchase of feed, livestock, seed, fertilizer, lime, petroleum products, and repair of capital items, hired labor, interest on non-real estate debt, and miscellaneous expenses.

[2]Includes all current farm operating expenses (listed above), plus depreciation, taxes on farm property, interest on farm mortgage debt, and net rent to nonfarm landlords.

wholesale petroleum cooperatives moved on to acquire small refineries and interests in producing wells.

A total of 2,624 cooperatives handled petroleum products in 1975 and reported net petroleum sales of $1.7 billion. The number of cooperatives handling petroleum products did not change materially from 1950 to 1975, but cooperative petroleum sales increased about 200 percent from 1950 to 1970 and another 67 percent between 1970 and 1975.

Cooperatives increased their share of the farm petroleum market from 21 percent in 1950 to over 31 percent in 1975 (table 27).

In 1975, 25 regional and 3 interregional cooperatives engaged in some type of petroleum operation. Twenty of the regional associations limited their petroleum operations to the marketing and distribution, and five were active in the production and refining of crude oil and the marketing of refined fuels. The three interregionals were in crude oil production and refining.

Cooperatives got into the petroleum refining industry—in a limited way—in 1939. By 1950, 14 regional associations owned 20 plants with refining capacity of about 145,000 barrels of crude oil a day. By 1976, the number of refineries operated by cooperatives had dropped to eight. But more important, the combined capacity of the cooperatives' refineries had increased to 388,038 barrels per day—or 2.56 percent of the total U.S. refining capacity.

Within a few years after cooperatives acquired refineries, they found it necessary to produce crude oil to ensure a more stable source of supplies. By 1975, however, they produced only 10-12 percent of the oil required by their refineries.

Since the Arab oil embargo during the winter of 1973-74, cooperatives have stepped up their efforts to increase their source of crude oil supply. With this purpose in mind,

Table 27—Sales of petroleum products by farmer cooperatives—and their share of the farm market—selected years, 1950 to 1975

Fiscal year[1]	Cooperative activities				Cash expenditures of all farmers for petroleum products used in agricultural production[4]	Cooperatives share of farm market
	Cooperatives handling	Net sales[2]	Less estimated sales to other firms and sales for nonfarm use[3]	Estimated sales to farmers for agricultural production		
	Number	*Million dollars*	*Percent*	*Million dollars*		*Percent*
1950-51	2,848	366	30	256	1,221	20.9
1955-56	2,739	494	35	321	1,419	22.6
1960-61	2,798	622	42	361	1,496	24.1
1965-66	2,733	702	42	407	1,592	25.6
1970-71	2,704	1,001	45	551	1,716	32.1
1974-75	2,624	1,675	45	921	2,946	31.3

[1]For fiscal years ending between July 1 and following June 30.

[2]Cooperative sales after eliminating all intercooperative business.

[3]Nonfarm use includes petroleum products used in heating farm home(s), and gasoline used in automobiles and pickup trucks—for purposes other than the farm business.

[4]Average expenditures during the 2 calendar years that correspond to the fiscal years indicated for cooperatives.

three regional cooperatives and three other companies formed the Seaway Pipeline Company in 1974 to carry crude oil from tankers off the coast of Texas to inland refineries in Oklahoma.

Another recent development has been the formation of International Energy Cooperative, Inc., by 17 regional cooperatives. This association will seek to purchase crude oil supplies in international markets, purchase refined products in international and domestic markets, and engage in crude oil exploration.

Also in 1974, 16 regional cooperatives formed LVO International, Inc. with headquarters in Tulsa, Okla. to acquire petroleum interests in several overseas areas and further exploration in other presently held areas. In 1977, nine regional cooperatives formed Energy Cooperative, Inc., Long Grove, Ill., to purchase a major oil refinery at East Chicago, Ind.

Comparison of Four Cooperatives and Four Other Firms With Largest Sales of Petroleum Products in 1975

Characteristics of Cooperatives

The four cooperatives having the greatest petroleum sales in 1975 were the same associations as those in 1970, but the relative position of the top two was reversed. Three of the four largest in 1970 also were in the top four in 1965 and 1960.

Operations of the cooperative with the largest petroleum sales in 1975 were integrated and well diversified. Its six lines of business were as follows: (1) Petroleum products accounted for roughly 35 percent of its total sales; (2) livestock feed, 25 percent; (3) fertilizer, lime, and pesticides, 10 percent; (4) all other farm supplies, 5 percent; (5) home and garden supplies, 5 percent; (6) and marketing of farm products, 20 percent. This association had seven subsidiaries, was a member of, and owned stock in several interregional cooperatives.

The regional association that ranked second in petroluem sales in 1975 was fully integrated and well diversified. Its sales were broken down as follows: (1) Petroleum products accounted for about 31 percent; (2) fertilizer for 34 percent; (3) animal feeds for 10 percent; (4) other farm supplies for 7 percent; and (5) the marketing of farm products for the remaining 18 percent. This cooperative had 17 domestic subsidiaries, was a member of, and had a financial interest in, several interregional cooperatives.

The regional association ranking number three in petroleum sales was well integrated; however, it was less diversified than the first two cooperatives. Its sales were broken down into four major groups: (1) Petroleum products accounted for roughly 49 percent of its total sales; (2) general farm supplies for 33 percent; (3) farm and home equipment; 15 percent; and (4) transportation and other services, 3 percent. This association had two subsidiaries, was a member of, and had a financial interest in several interregional cooperatives.

The association ranking number four in petroleum sales was an interregional cooperative which devoted all its energies to the production, refining and distribution of petroleum products for its six-member regional cooperatives. It had seven domestic subsidiaries in 1975.

Characteristics of Other Petroleum Companies

Of the four noncooperative firms that reported the highest petroleum sales in 1975, three were in the "top four" in 1970. The top four firms in 1970 were also the largest in 1960 and 1965.

The noncooperative company with the largest petroleum sales in 1975 was completely integrated, but it was not nearly as diversified as many other large corporations. Petroleum products accounted for approximately 90 percent of its total sales; petrochemicals for 8 percent; and other products for 2 percent. The parent organization had 56 subsidiaries—15 in the United States and 41 in other countries.

The noncooperative firm ranking number two in petroleum sales was highly integrated and diversified. Petroleum products accounted for nearly 85 percent of its total sales; petrochemicals, 8 percent; automotive products, 3 percent; oil burners, boilers, furnaces, etc., 3 percent; lawn food products, 1 percent; and miscellaneous products, 1 percent. Fifty-four percent of the company's earnings in 1975 were derived from domestic operations. The company had 30 wholly owned and 4 partially owned subsidiaries in 1975, with 16 located in the United States and 18 in other countries.

The firm ranking third in petroleum sales was completely integrated, but it was not too well diversified. Its sales consisted of three broad categories: Petroleum products accounted for about 96 percent of its total; petro-chemicals for 2 percent; and chemical fertilizers and miscellaneous, 2 percent. This company had 65 subsidiaries with 29 located in the United States, and 36 in other countries.

The noncooperative company ranking fourth in petroleum sales in 1975 was completely integrated and more diversified than either of the top three major oil companies. The sales of the company were classed into five major groups. Refined petroleum products accounted for roughly 70 percent of total sales; crude oil, 16 percent; petro-chemicals and agricultural fertilizers, 8 percent; and service, 3 percent. The parent company had a total of 488 subsidiaries with 198 in the United States and the remaining 290 in various foreign countries.

With the exception of the interregional petroleum cooperative—which handled petroleum products exclusively—the cooperatives were more diversified than the noncooperative petroleum companies. Three of the cooperatives sold four or more lines of products, and two associations performed some marketing functions. Petroleum products accounted for 31 to 49 percent of these three cooperatives' total sales, compared with 70 to 96 for the noncooperative firms.

The four cooperatives had a total of 33 subsidiaries—all were located in this country, and each of the cooperatives were members of a limited number of interregional cooperatives. The four noncooperative firms had a total of 643 subsidiaries—with 254 located in this country, and 389 located in foreign countries.

Financial Comparisons

Petroleum Sales—During the 15-year interval the combined petroleum sales of the four cooperatives varied from only 1.1 to 1.7 percent of the petroleum sales of the four noncooperative firms (table 28). The petroleum sales of the four cooperatives increased by slightly more than six times between 1960 and 1975. During the same period the petroleum sales of the four noncooperative firms increased about five and one-half times.

Total Sales—The combined sales of the cooperatives were less than 2 percent of the combined sales of the four noncooperative firms in 1960; in both 1970 and 1975 they were

Table 28—Selected comparisons of four cooperatives and four other firms having largest petroleum sales—selected years, 1960 to 1975

Year[1]	Four cooperatives	Four other firms	Cooperatives as a percent of other firms
	Million dollars		*Percent*
Petroleum sales[2]			
1960	232	16,920	1.37
1965	265	23,540	1.13
1970	558	33,390	1.67
1975	1,415	94,701	1.49
Total sales			
1960	304	16,900	1.80
1965	566	23,500	2.41
1970	1,205	37,100	3.25
1975	3,571	112,549	3.17
Net margins[3]			
1960	23	1,600	1.44
1965	44	2,400	1.83
1970	51	3,200	1.59
1975	295	16,172	1.82
Total assets			
1960	263	18,000	1.46
1965	382	30,000	1.27
1970	842	45,759	1.84
1975	1,859	78,050	2.38
Net worth			
1960	173	15,200	1.14
1965	241	20,300	1.19
1970	392	27,000	1.45
1975	694	39,025	1.78

[1]Data are for fiscal or calendar year ending in specified year listed.
[2]Includes sales of gasoline, diesel fuel, natural gas, LP gas, fuel oil, and residual fuels.
[3]Net margins *before payment* of income taxes.

more than 3 percent. The combined sales of the four cooperatives increased nearly 12 times from 1960 to 1975. During the same time span the combined sales of the four noncooperative firms increased less than seven times.

Net Margins (Before Taxes)—The combined net margins realized by the four cooperatives were less than 2 percent of those realized by the four noncooperative firms in each of the four time periods. The combined net margins of the four cooperatives increased nearly 13 times from 1960 to 1975. During the same period, the net margins of the four noncooperative firms increased about 10 times.

Total Assets—In 1975 the combined assets of the four cooperatives had increased to nearly 2.4 percent of the total assets of the four noncooperative firms. The total assets of the four cooperatives increased about seven times between 1960 and 1975; while the total assets of the four noncooperative firms increased about four times.

Net Worth—In 1975 the net worth of the four cooperatives had increased to nearly

1.8 percent of the net worth of the four proprietary firms. The net worth of the four cooperatives increased approximately four times between 1960 and 1975. During the same period, the net worth of the four noncooperative firms more than doubled.

Summary

1. Farmers' expenditures for petroleum used in production operations have increased from $1.2 billion in 1950 to $3.2 billion in 1975, or about 166 percent.

2. In 1975 farmers used 2,624 cooperatives in purchasing about 31 percent of their farm petroleum needs.

3. Petroleum sales of the top four cooperatives in 1975 were $1.4 billion, or only 1.5 percent of the petroleum sales of $94.7 billion by the top four other firms.

4. In comparing total operations of the two groups, the top four cooperatives had only 3 percent of the sales, 1.8 percent of the net margins, 2.4 percent of the assets, and net worth of only 1.8 percent.

5. Since 1960 the top four cooperatives have remained in about the same relative position in all of the comparisons except total sales where they gained slightly.

Summary Tables

Summary table 1—Summary of changes in farmers cash receipts from the sale of 4 products and changes in expenditures for 3 farm supplies, 1950 and 1975

Product	Total farm receipts or expenditures		Percent increase	Percent of total farm cash receipts or expenditures	
	1950	1975		1950	1975
	Million dollars			*Percent*	
Receipts					
Grain	5,019	27,428	446	17.6	30.6
Fruits & vegetables	2,624	8,608	228	9.2	9.6
Milk & products	3,719	9,886	166	13.0	11.0
Poultry & products	2,791	6,584	136	9.8	7.4
Expenditures					
Feed	3,283	12,902	293	16.9	17.1
Fertilizer & lime	975	6,847	602	5.0	9.1
Petroleum[1]	1,192	3,209	169	6.1	4.3

[1]Excludes petroleum products *not used* in farm business, such as home heating oil and part of that used in autos and trucks.

Summary table 2 —Summary of changes in net sales and share of farm market by cooperatives handling 4 farm products and 3 farm supplies, 1950-51 and 1974-75

Product	Net sales[1] 1950-51	Net sales[1] 1974-75	Percent increase	Share of farm market[1] 1950-51	Share of farm market[1] 1974-75
	Million dollars			*Percent*	
Receipts					
Grain	1,446	14,090	874	27.5	44.2
Fruits & vegetables	702	2,730	289	23.7	24.8
Milk & products	1,933	8,376	333	47.8	77.1
Poultry & products	263	763	190	7.9	8.1
Expenditures					
Feeds	683	2,587	279	18.2	18.4
Fertilizer & lime	154	1,963	1,142	14.8	29.6
Petroleum	366	1,675	358	21.0	31.3

[1]Share of market for farm products based on net amount received by farmers after deducting marketing margins and value added by processing.

Summary table 3—Comparisons of four largest cooperatives and four largest other firms selling four selected and three farm supplies in 1975

Comparisons — Four cooperatives as a percent of four other firms selling:

Comparisons	Grain	Fruits and vegetables	Dairy	Poultry
		Percent		
Grain sales	---	---	---	---
Fruit and vegetable sales	---	42.6	---	---
Dairy sales	---	---	54.9	---
Poultry and egg sales	---	---	---	50.5
Total sales	24.0	31.9	23.2	37.4
Total assets	28.0	24.2	12.0	62.5
Net worth	38.0	17.0	8.9	47.7

Comparisons	Feed	Fertilizer	Petroleum
		Percent	
Feed sales	33.6	---	---
Fertilizer sales	---	69.2	---
Petroleum sales	---	---	1.5
Total sales	57.2	15.1	3.2
Total net margins[1]	65.2	28.1	1.8
Total assets	60.4	13.3	2.4
Net worth	37.7	7.1	1.8

[1]Before income taxes.

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